

PROJECT BOOK

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Interiors Building Cities
Graduation Studio
2021/2022

Introduction

The brief of this year's studio addresses the National Bank of Belgium located on the border of upper and lower parts of Brussels. The current fortress like megastructure that the bank occupies is imposing power and solidity, but is closing itself completely from the public. With the traditional role of the bank such as printing and storage of currency being relocated outside of the city and finance transitioning to virtual mediums, the National Bank of Belgium seeks to both redefine itself physically and at the same time rethink its role in the society.

Relationship between research and design

As the city of Brussels has declared itself a doughnut economy, the future national bank should be taking into consideration the environmental impact that this project will have but also its future consumption. The future bank is a catalyst of change which would affect the city in various scales - through the future economy, society's attitude and awareness and hopefully set an example to be followed by other institutions.

Before starting to analyze the existing megastructure it was important to understand what is the role of the national bank and how this building is used now and how it will be used in the future. The national bank is responsible for printing banknotes and placing in circulation coins and notes. However, with the new project for the bank this program is not going to take place in this building. The bank ensures economic stability, sets interest rates and lends money to the commercial banks which are then going to the public. The banks states it is "as an institution promoting the public interest, the National Bank performs numerous services for individuals", however, the new brief and when we visited the bank it was quite the opposite. The public was not welcomed, nor will be in the future according to their brief. There was one open counter for money exchange in the whole Bank. The national bank of Belgium currently is a closed institution where the public is kept outside by the strong boundaries of the building edge.

However, the bank typology back in the time was not always this closed and private institution. My research originated with looking at precedents of the bank typology and how it operated back in the time. Starting from the first stock exchanges in Antwerp and London which were built for the merchants and bankers. The architectural scheme was different - an open space surrounded by cloisters. It was a place where bankers would meet to discuss business, government and individual debts. It was a place of exchange, where the public was invited to enter. Therefore, I started looking and studying how to bring this model of the bank institution back.

The city of Brussels has declared itself a doughnut economy. Therefore, I asked myself the question what is there to be done to positively influence this model and where is it lacking attention at the moment so the bank could respond to this. The national bank is an institution that sets an example and therefore is therefore socially responsible. This is also one of the core values for the institution. Moreover, social equality and justice are among the foundation of the doughnut economy model which the bank has to strive for. However, currently the national bank is merely touching upon this aspects of the model.

After doing my research, looking at the responsibilities of the national bank and the future goals that we must strive for, I concluded that the national bank fails to positively contribute to the above stated core values, fails to fulfill its mission as a socially responsible

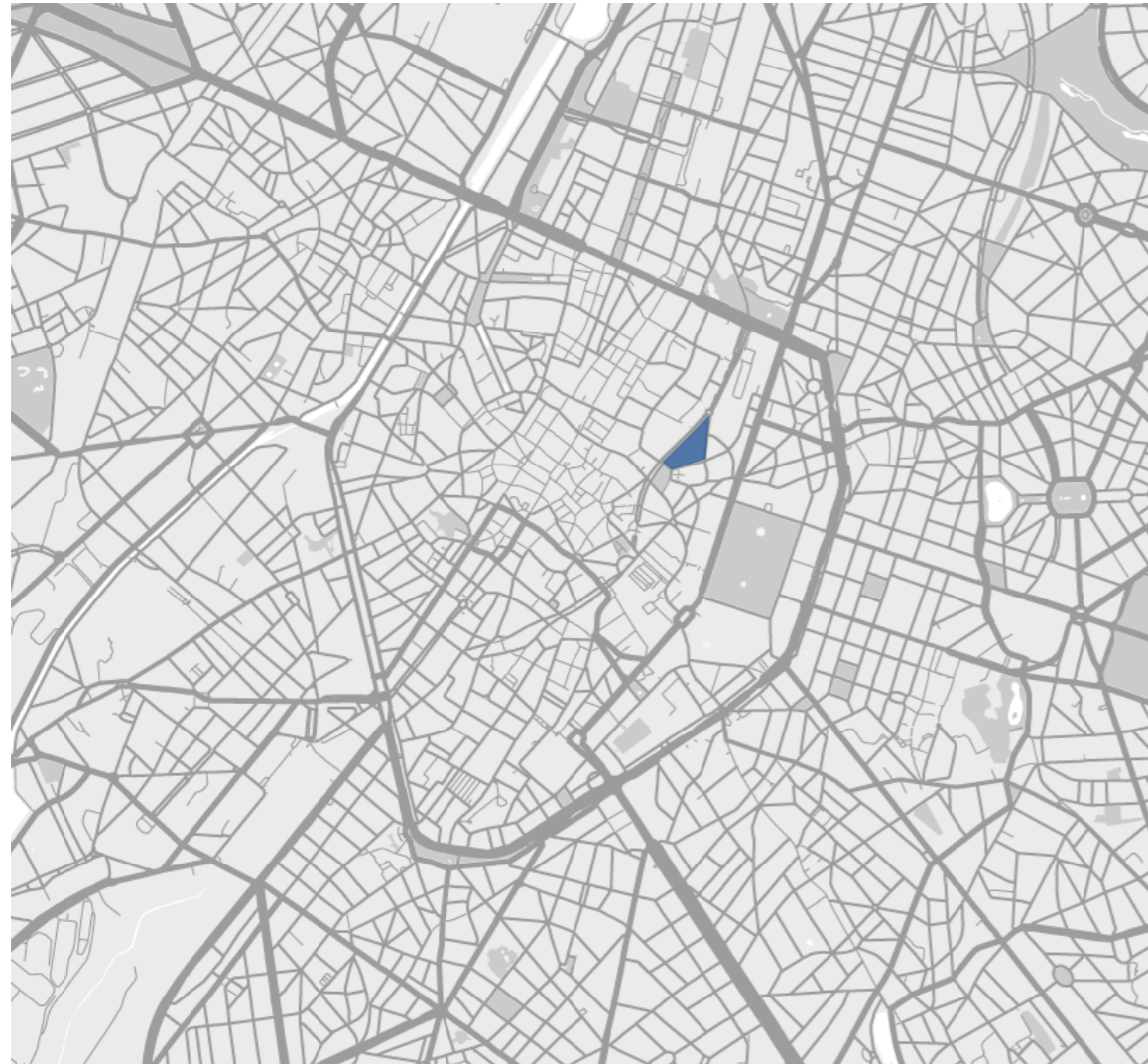
and inclusive institution. Moreover, the money-based market system fails to reward many types of critical work—the work of building strong communities, revitalizing neighborhoods, preserving the environment, advancing social justice, and sustaining democracy.

In order to meet these societal, environmental needs, my proposal for the national bank of Belgium is to offer opportunities for fostering more equitable and inclusive economic order alongside with the money-based market within the institution. This way the bank typology goes back to its roots and once again becomes a place of exchange for the public. An exchange of values, knowledge, skills, experience, time. The bank accommodates different alternatives of dealing with the value of things. If we are going to actually rethink the economy in our society, then the idea of fostering alternative banking such as time banking, using local currencies, community banking, community funding bartering in the National Bank of Belgium is already a beginning of putting an emphasis on the fact that there is value in other things apart from money.

The national bank becomes an inclusive space without hierarchies where people are welcomed to express themselves, take part into the alternative banking, protest even by being part of the what might be called a city forum. The project for the national bank aims to engage citizens to come together to form communities and to take part in the micro banking. It is a democratic place where everyone is welcomed. It becomes a more transparent and active institution which fosters other monetary systems apart from the money based one. The national bank becomes an active part of the citizen's daily life and not just for its employees as it was functioning until now. The new design offers an active edge where the public is invited. It is no longer a fully enclosed megastructure with fences on its edges and no activities on the plinth. The monumental 200 metres facade now transforms into a permeable edge with visibility towards the banking hall. The iconic banking hall opens to the public and accommodates alternative monetary systems, hosts organisations which strive for social justice and environmental protection and at the same time gives opportunities for various forms of exchange both for the public and the employees of the bank. The bank remains publicly accessible on the ground levels all around the block from the street level. The banking hall becomes a public interior which makes a visual connection the offices of the bank as well through the new atrium core designed. It aims to unite the two banking halls and give the opportunity to the public to see how the employees of the national bank occupy their offices.

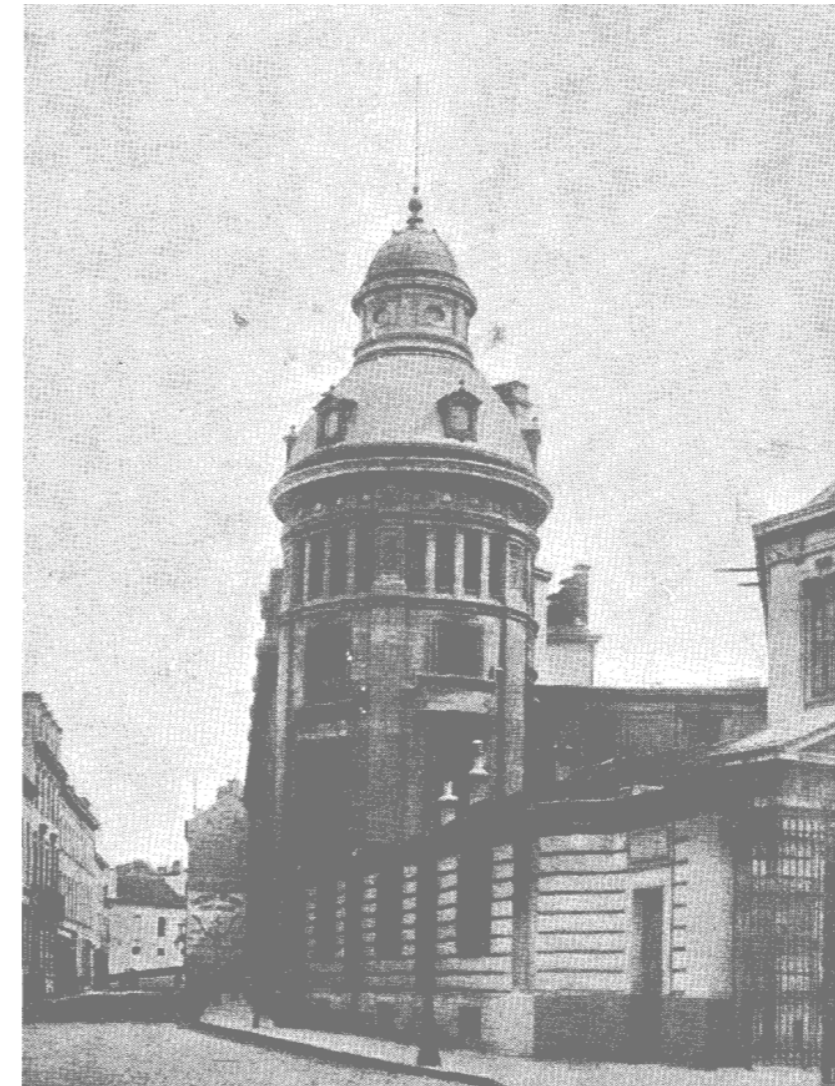
Conclusion

In conclusion, the proposed design comes together from the research on alternative monetary system, societal issues nowadays, social plinth study, and office and bank precedents which have successfully started off these typologies. The National Bank of Belgium becomes an open institution which gives opportunities for citizens to take part of micro banking activities, supports and gives out space where they can express themselves and exchange valuable things different from money only. It becomes a centre of social activities where people support each other and feel safe in a democratic place without any hierarchies without disturbing the private bank's office environment. This project is an attempt to bring back the bank typology as it originated, where everyone was involved in the inclusive exchange of valuable physical and non-physical matters. Overall, my research process has been very insightful for my design, it allowed me to reach some conclusions as well as offering me different approaches on how to deal with existing building of such importance.



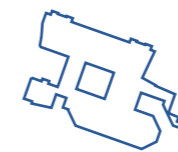
Location of the National Bank

City Scale Brussels



The National Bank in 1860
Beyaerts tower on Berlaimont street

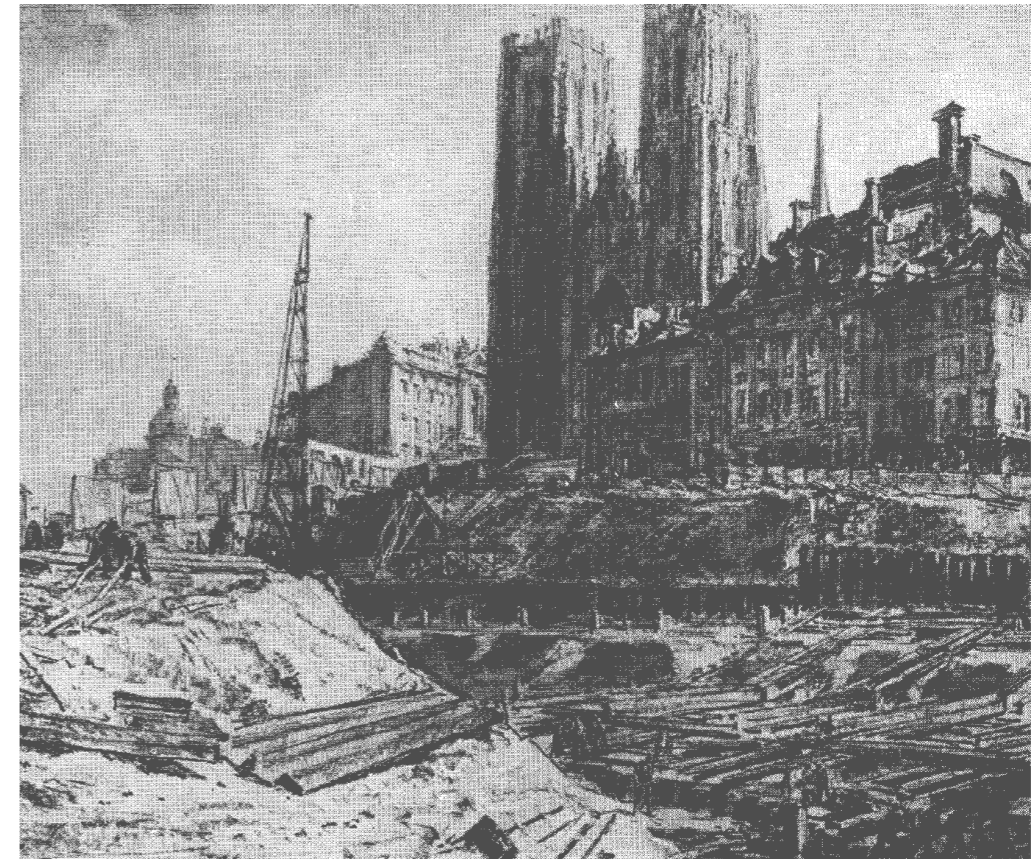
Architect: Hendrik Beyaert





Location of the Bank - City Scale

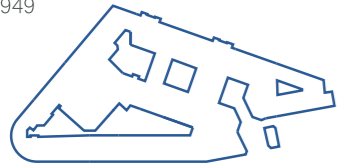
North-south junction became the largest urban development project in the early 20th century which eased the traffic between the two parts of Belgium by connecting the north and south station.



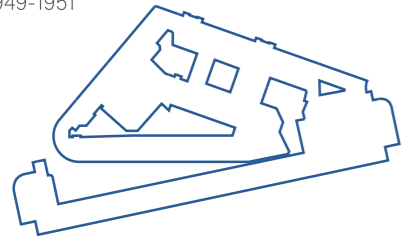
Redevelopment of the Bank

Construction work for the North-south junction required demolishing a series of districts in the heart of the city. At the same time the bank employees were increasing steadily, the demand for bank note's emission grew exponentially and the need for extension of the bank's building became urgent. The creating of the North-South Junction was the perfect opportunity to do this.

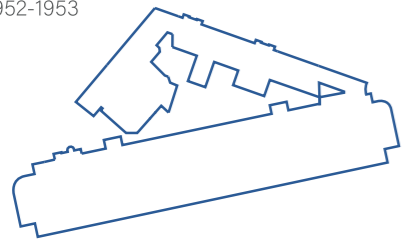
1948-1949



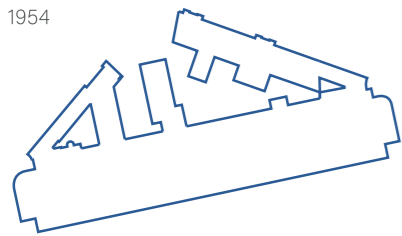
1949-1951



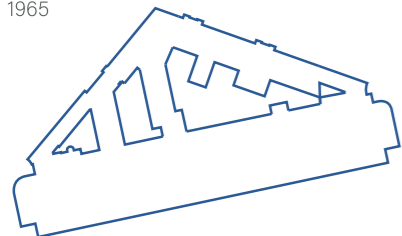
1952-1953



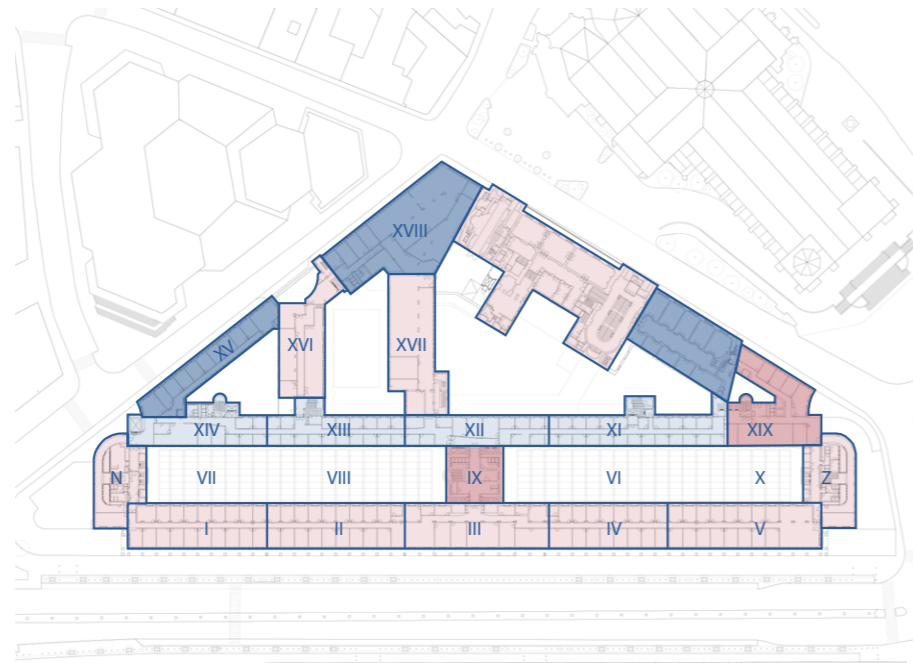
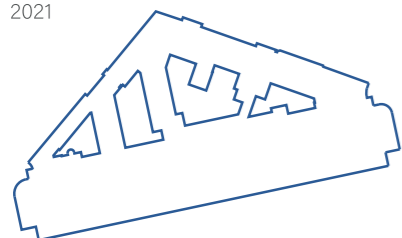
1954



1965



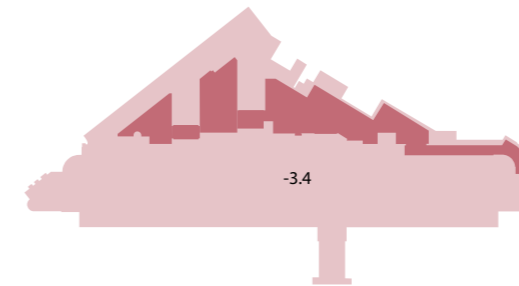
2021



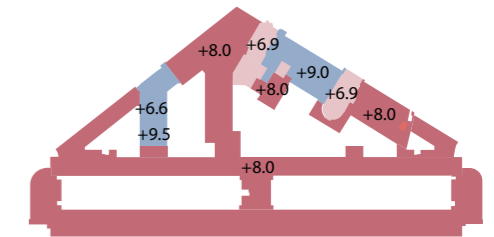
Construction Phases

The new architect who started working for the Bank was Marcel Van Goehem. From 1948, the building was constructed in phases, as the service of the Bank couldn't be interrupted. Both construction work and usual bank service had to be carried out simultaneously, so the project was carried out in phases, and the different services moved into the new buildings as they were finished.

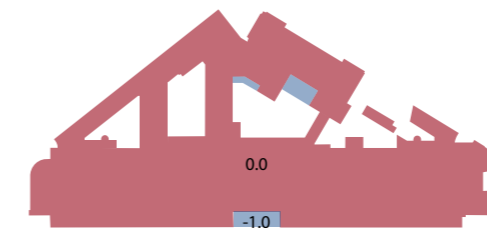
Basement -1 (-3.40)



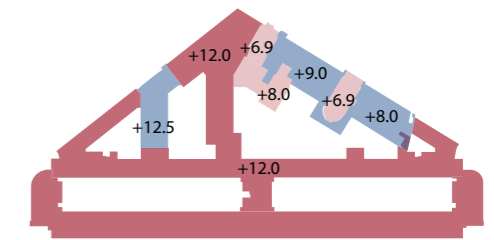
Floor 1 (+8.00)



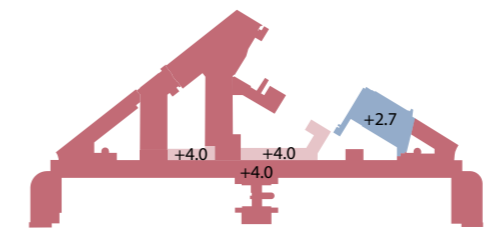
Ground floor (±0.00m)



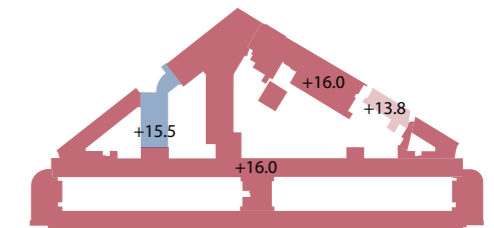
Floor 2 (+12.00)



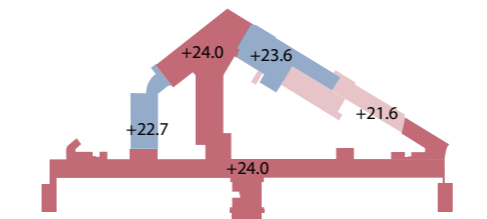
Floor 01 (+4.00)



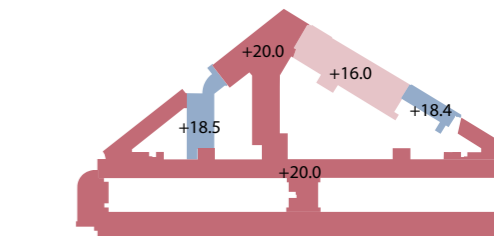
Floor 3 (+16.00)



Floor 5 (+24.00)

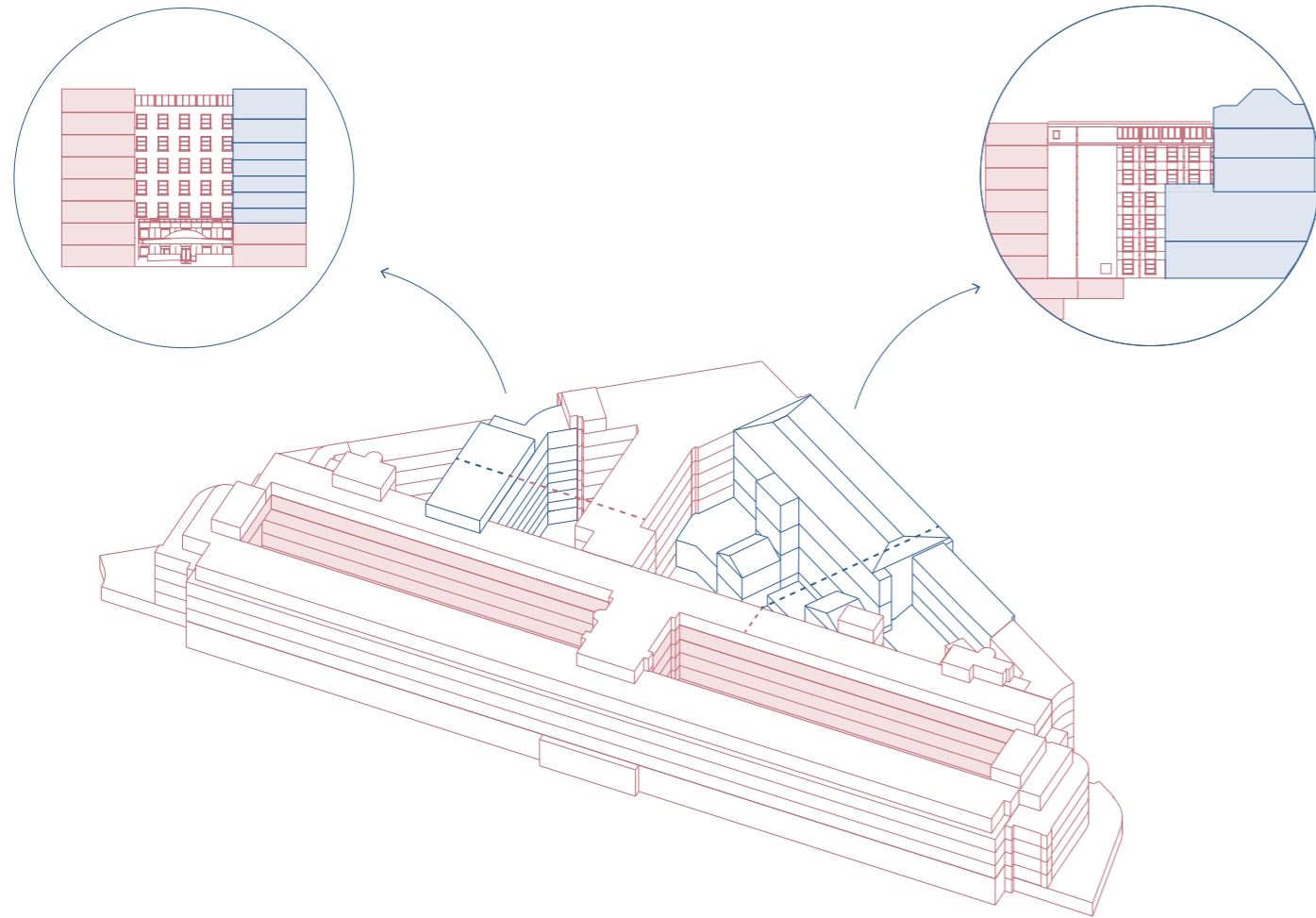


Floor 4 (+20.00)



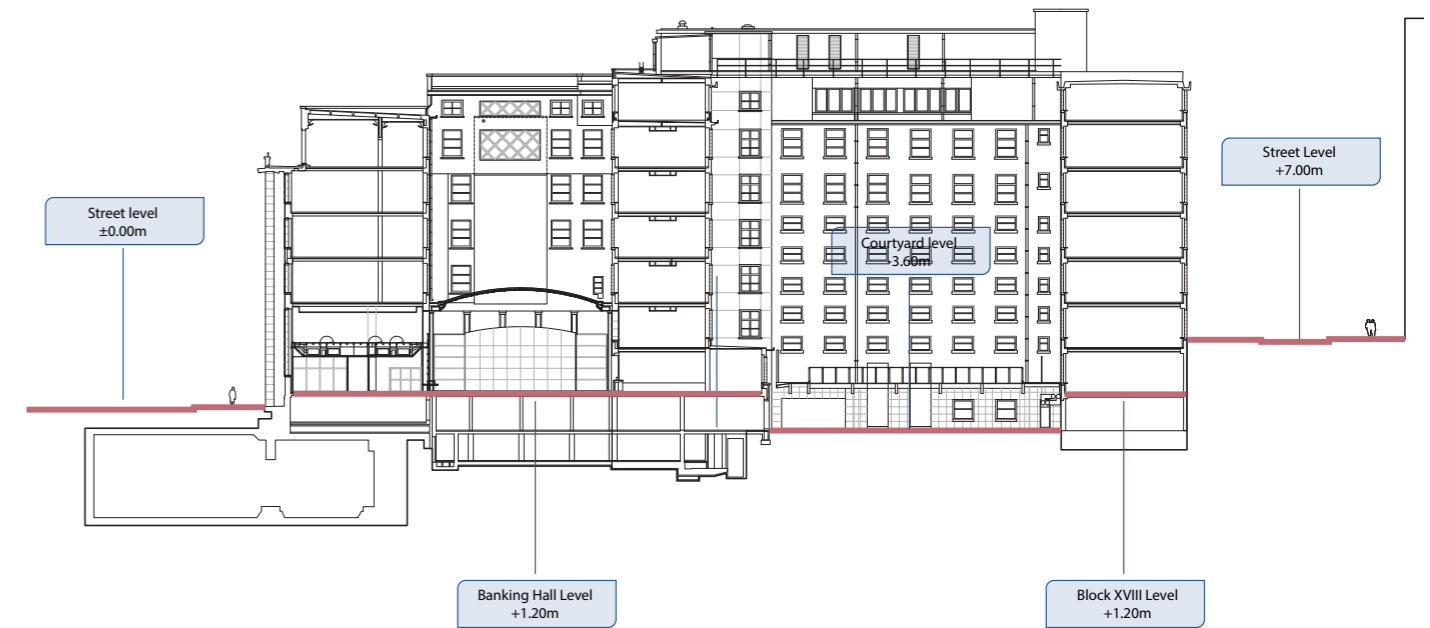
Floor Heights - Differences in Plan

Since the building was built in phases and the demands were therefore changing with time, more space was required for the national bank. Because of this some parts of the bank have additional floors to increase the floor area on the expense of height. In these diagrams we can see each floor and its differences in level.



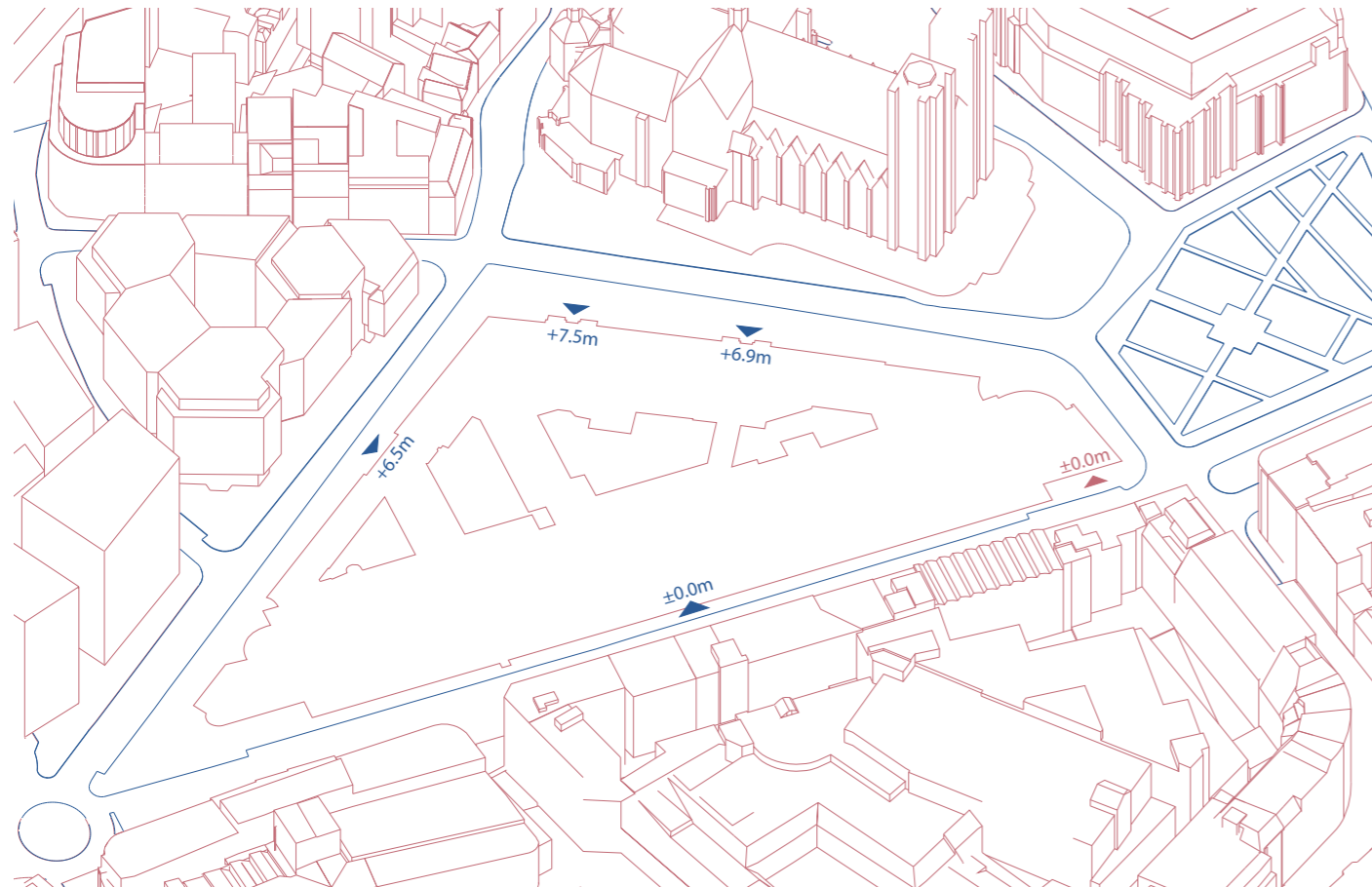
Floor Heights - Differences in Section

There are two buildings which floors alter from the rest. This is the governor's palace and block 17. The palace has a different typology from the rest of the buildings and functions as a separate building because it was preserved from the previous architect. However, it is still connected from street level to the banking hall. Block 17 stands out with its 2.50m floor levels disconnecting it from all other blocks surrounding it.



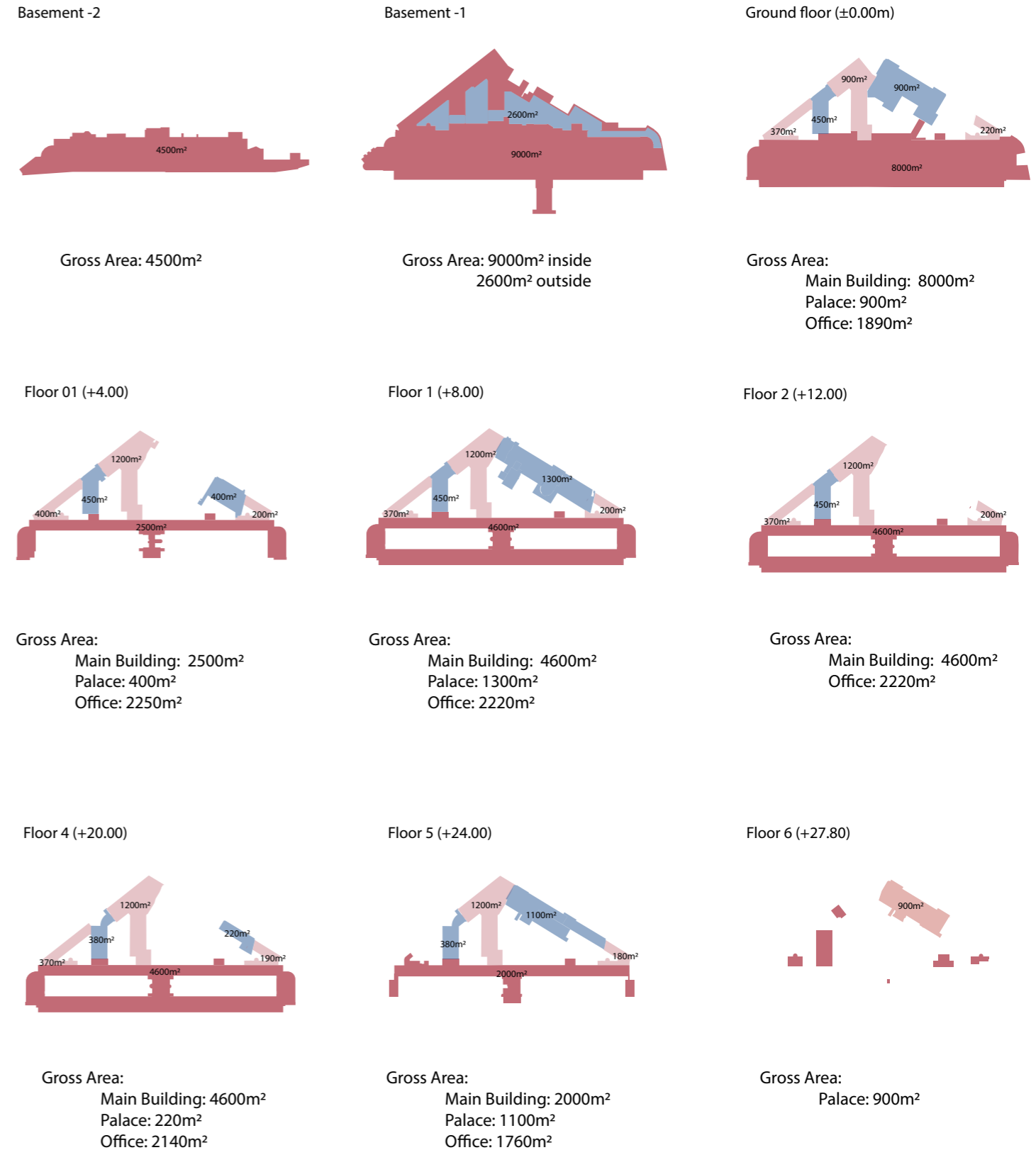
Courtyards & Building Levels

Disconnected Network



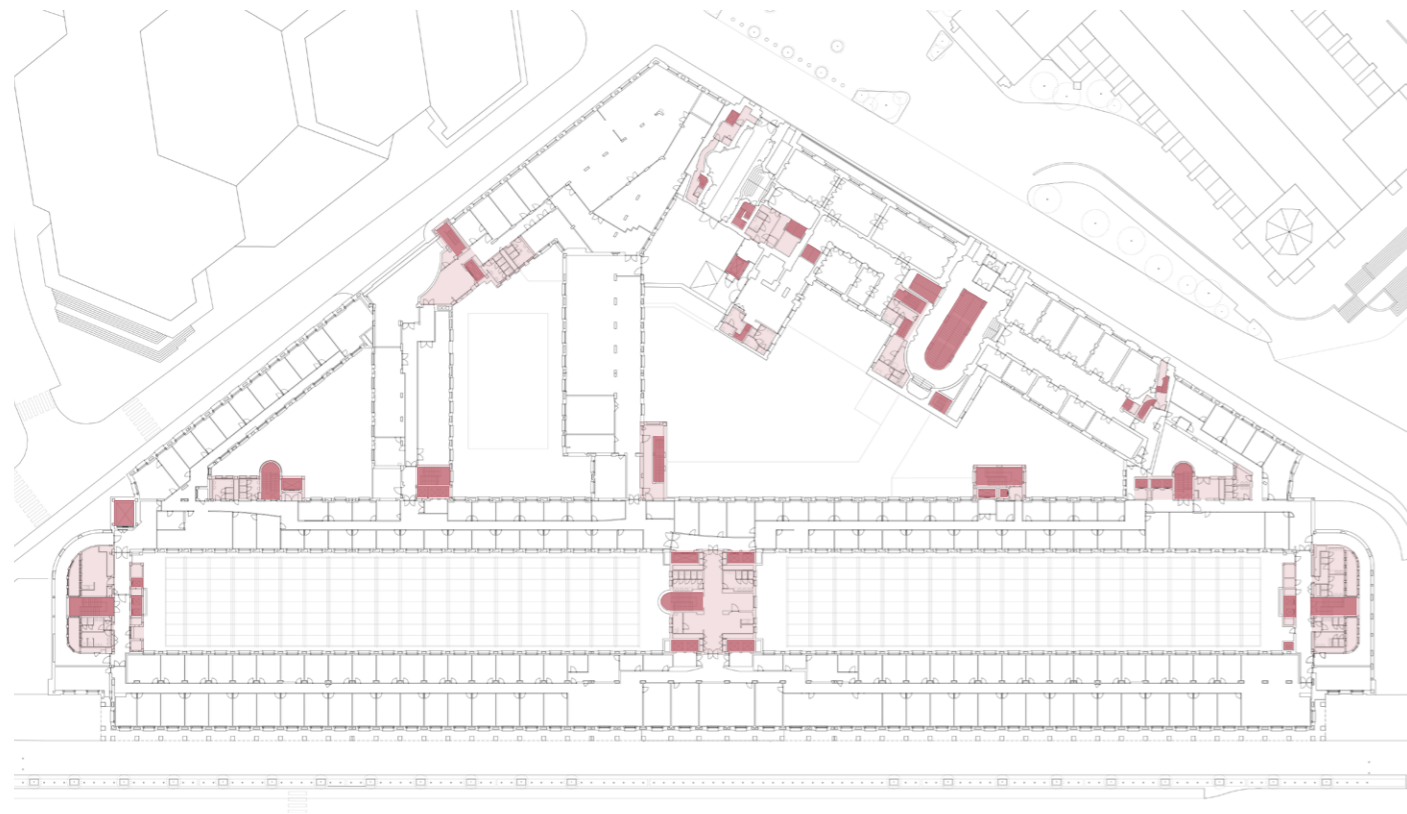
Entrances - Level Differences

10. The bank structure is located on a hill. There is a difference of around 8 meters from the main boulevard Berlaimont and the Rue du Sauvage. There are 4 pedestrian entrances marked in blue and one vehicle entrance for servicing the bank. However, only this entrance functions for the employees at the moment.



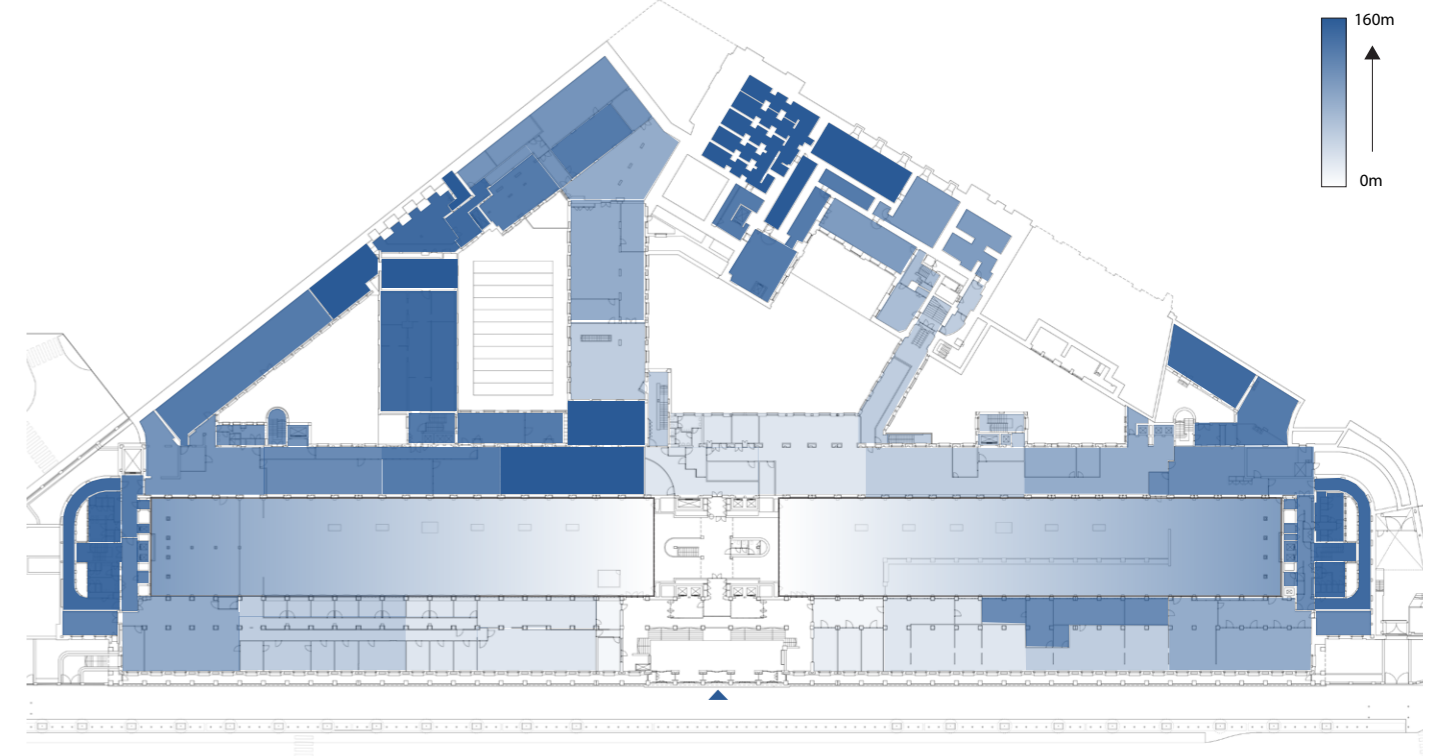
Area Calculation

Total Area: 67 500 m²
 Brief Area: 45 000 m²
 Left Area: 22 500 m²



Circulation - Existing Vertical Connections

The vertical connections in the building are also result of the construction in phases and level difference both in typology and in floors. The main block has three main circulation cores and 4 attached. Block 17 is connected through this service core.



Circulation - Distance from Entrance

As a result of the only one functioning entrance, closed off interior and disconnection with some buildings, during our visit employees said that sometimes they need more than 20 min to reach their working space. This diagram show the areas in dark blue which are furthest to reach from the main entrance. Even though some of them seem very close to the entrance, because of the closed off interior they need to go around long corridors to reach their desk.

ISSUE MONEY

the printing of banknotes and the placing in circulation of coins and notes

MONETARY POLICY

Set Interest Rates

**ENSURE STABILITY**

the collection, circulation and analysis of economic and financial information

LENDER OF LAST RESORT

Lender to Commercial Banks

SERVICES FOR THE GENERAL PUBLIC

“as an institution promoting the public interest, the National Bank performs numerous services for individuals”

- Exchanging banknotes and coins
 - Securities and coupons
- Central Individual Credit Register
- Central Balance Sheet Office
 - Documentation base
 - Museum

Source: <https://www.nbb.be/en/faq/what-purpose-national-bank>

Role of the National Bank of Belgium

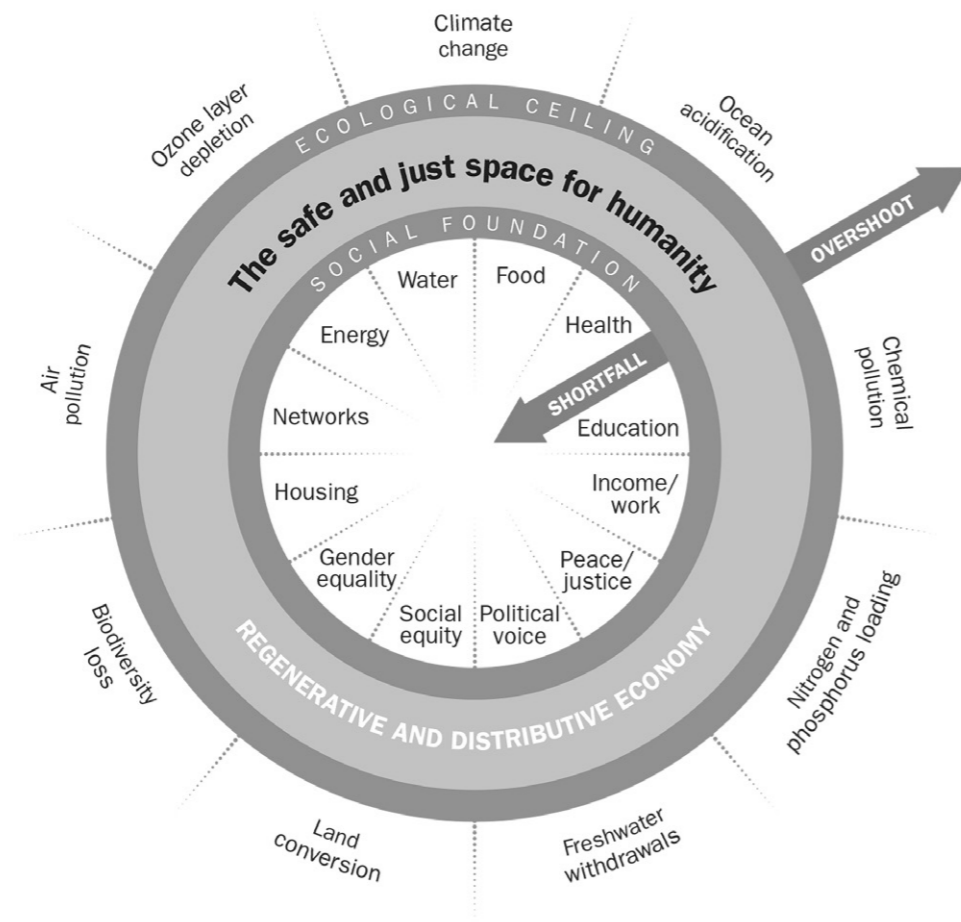
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What is the service for the general public?

*The first stock exchange began in Antwerp, Belgium in 1531*

My research started from looking at precedents of the bank typology and how it operated back in the time. This is the first stock exchange in Belgium 1531 which was built for the merchants and banker. The architectural scheme was different - an open space surrounded by cloisters. It was a place where bankers would meet to discuss business, government and individual debts.

Architect: Domien De Waghemakere



Kate Raworth, Doughnut Economics

Doughnut economic model | Kate Raworth

As the city of Brussels has declared itself a doughnut economy, the future national bank should be taking into consideration the environmental impact that this project will have but also its future consumption.

What can we do to positively influence this model and where is it lacking attention at the moment so the bank could respond to this?



THE BANK AS A CATALYST OF CHANGE

“Social responsibility is one of our key values”

Source: <https://www.nbb.be/en/-faq/what-purpose-national-bank>

The Bank as a Catalyst of Change

The future bank is a catalyst of change which would affect the city in various scales - through the future economy, society's attitude and awareness and hopefully set an example to be followed by other institutions.



The money-based market system fails to reward many types of critical work—the work of building strong communities, revitalizing neighborhoods, preserving the environment, advancing social justice, and sustaining democracy.

Money-Based Market

As a conclusion of my research and the contribution of the national bank to the core values, it fails to fulfill its mission as a socially responsible and inclusive institution. Moreover, money-based market system fails to reward many types of critical work—the work of building strong communities, revitalizing neighborhoods, preserving the environment, advancing social justice, and sustaining democracy.



What if the bank host an alternative, more equitable and inclusive economic order?

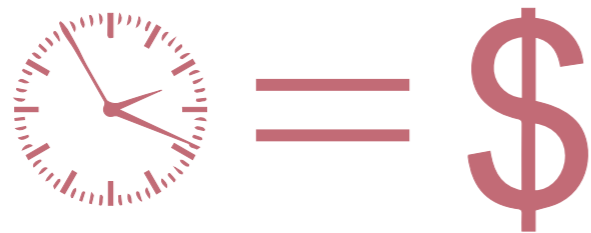
LOCAL CURRENCY



COLLABORATIVE FINANCE

BARTER

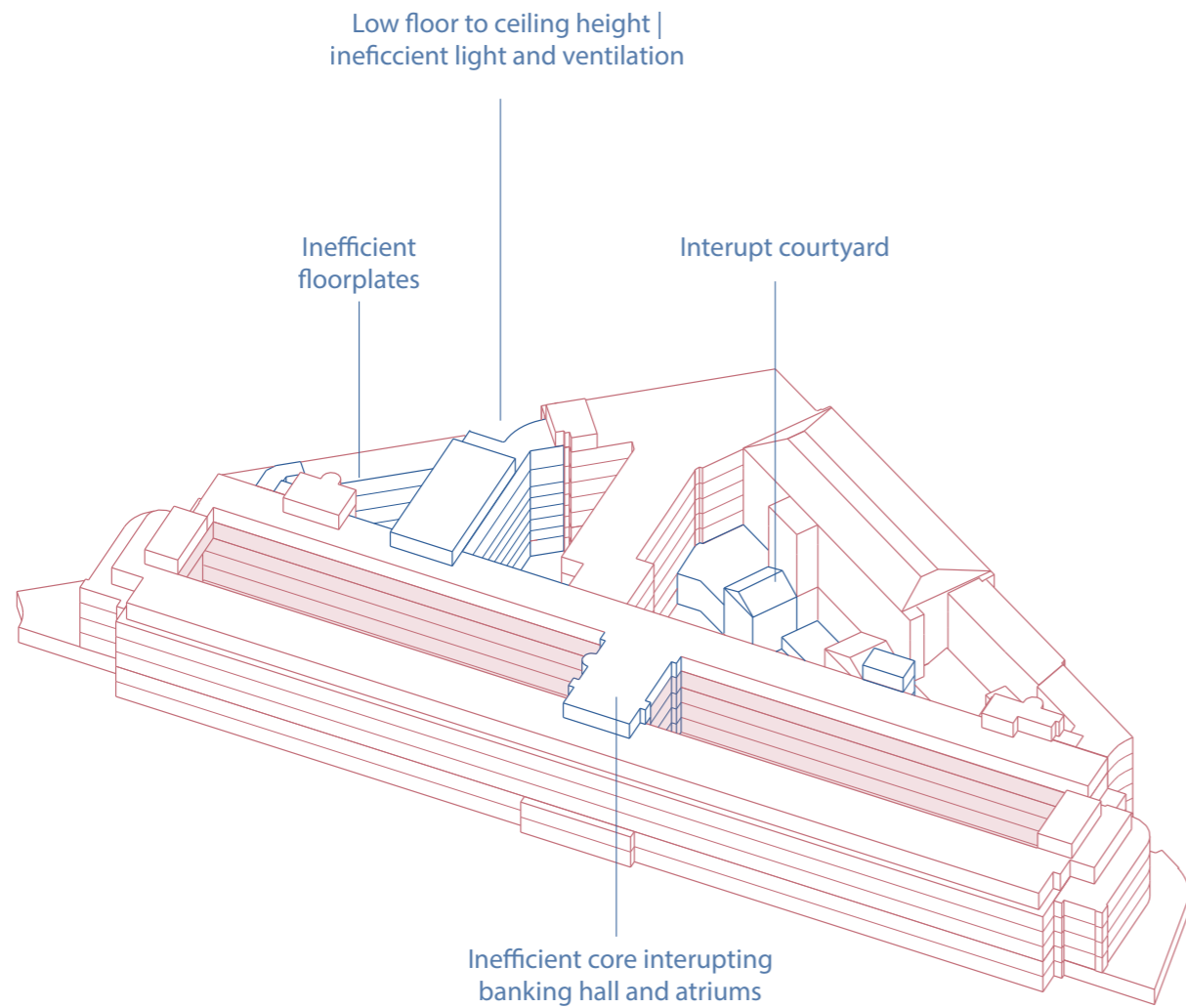
TIME BANKING

*An Alternative Scenario*

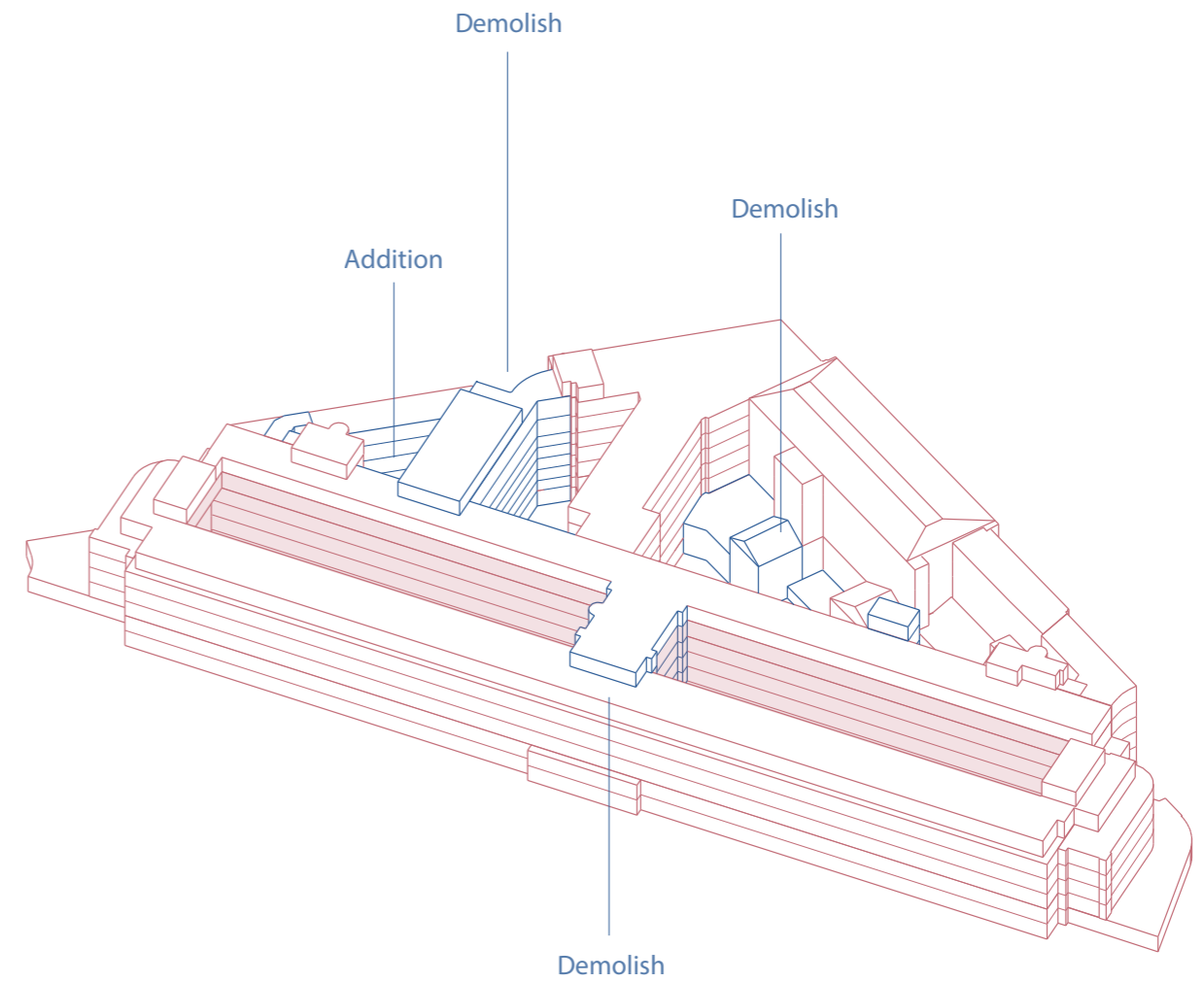
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*Collage of current banking hall in NBB and London Stock Exchange*

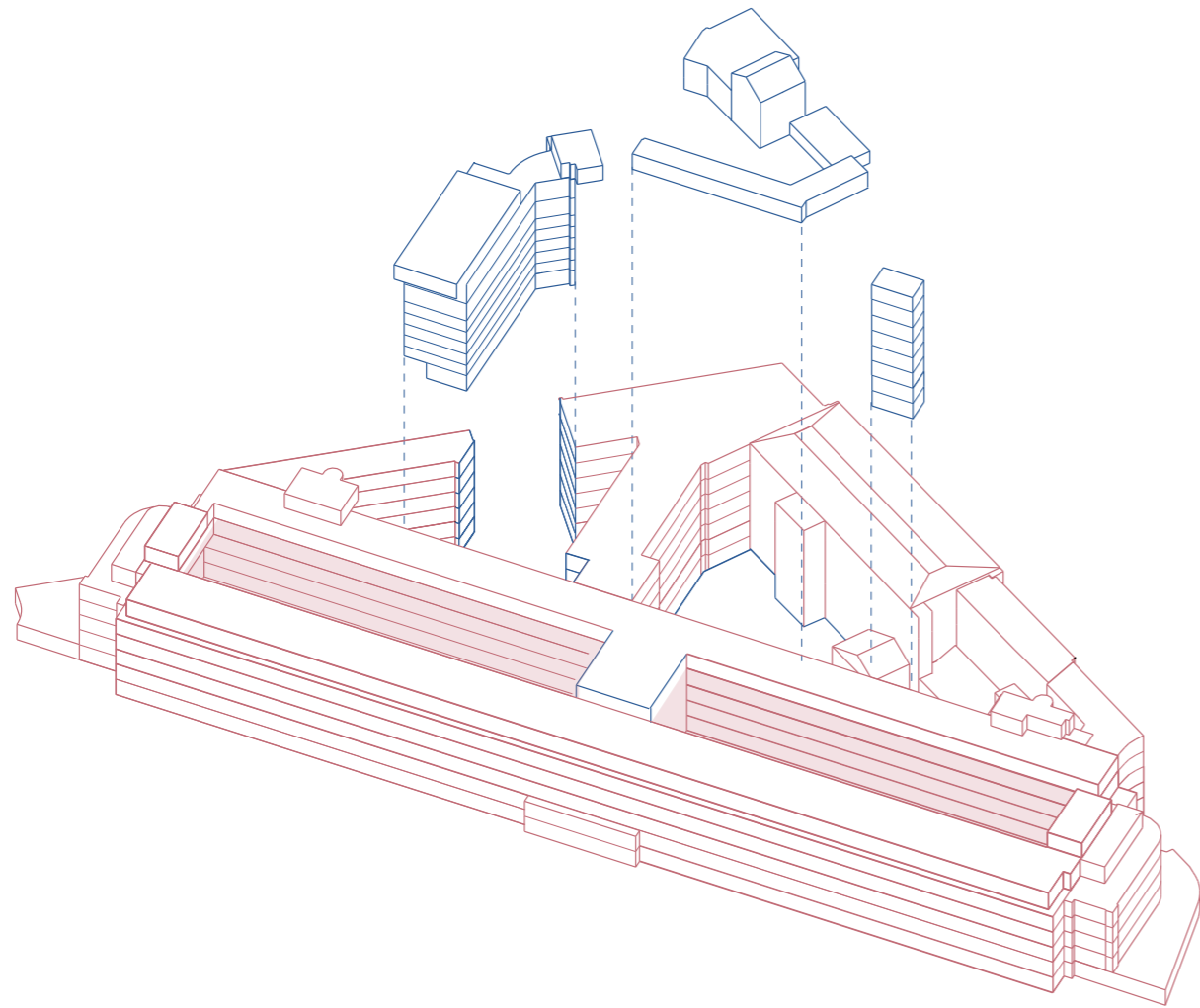
I did a collage juxtaposing the banking hall of the national bank of Belgium and the stock exchange of London. My goal for the future bank is for the banking hall to return back to its roots and turn into a city forum. It is a democratic and protected place without hierarchies which the bank supports. It will be venue for speeches, marketplace, place for bartering, place for exchange of knowledge and other valuable things.



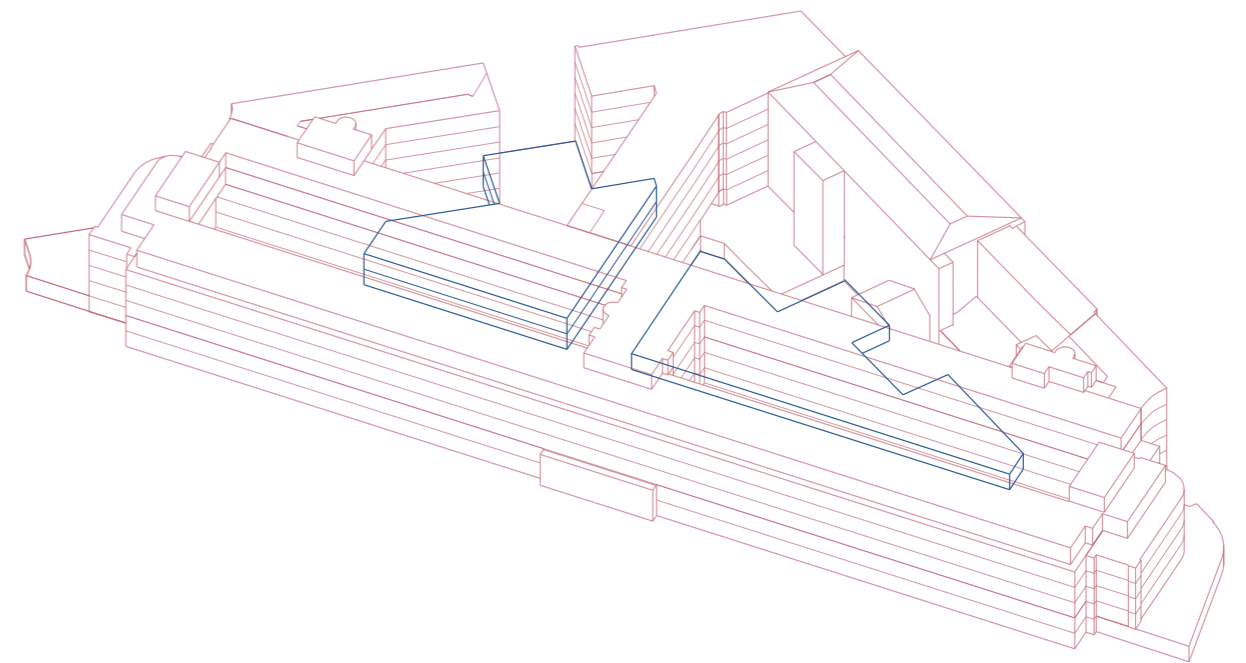
Points of Intervention
Existing National Bank



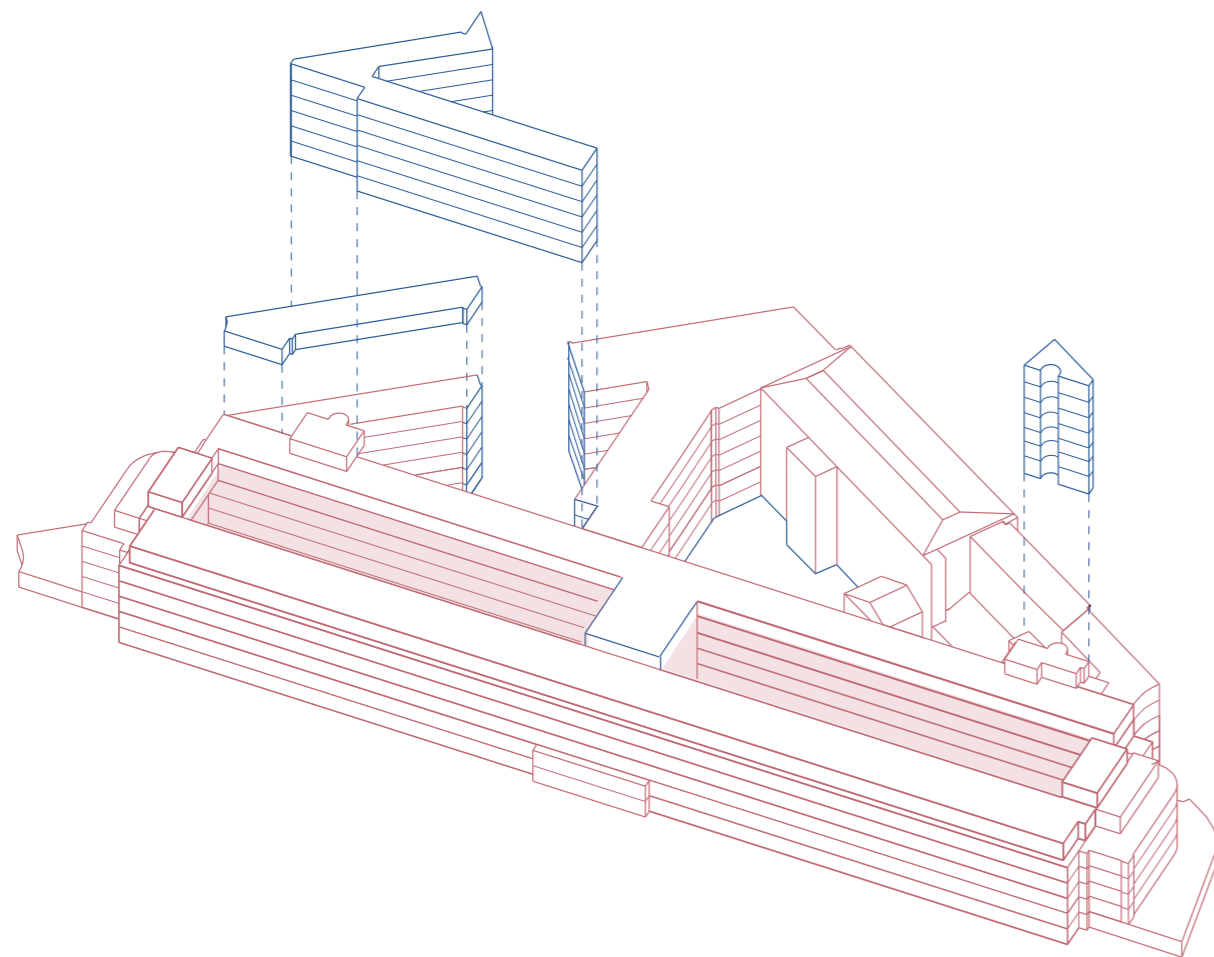
Points of Intervention
Removal of Existing Volumes



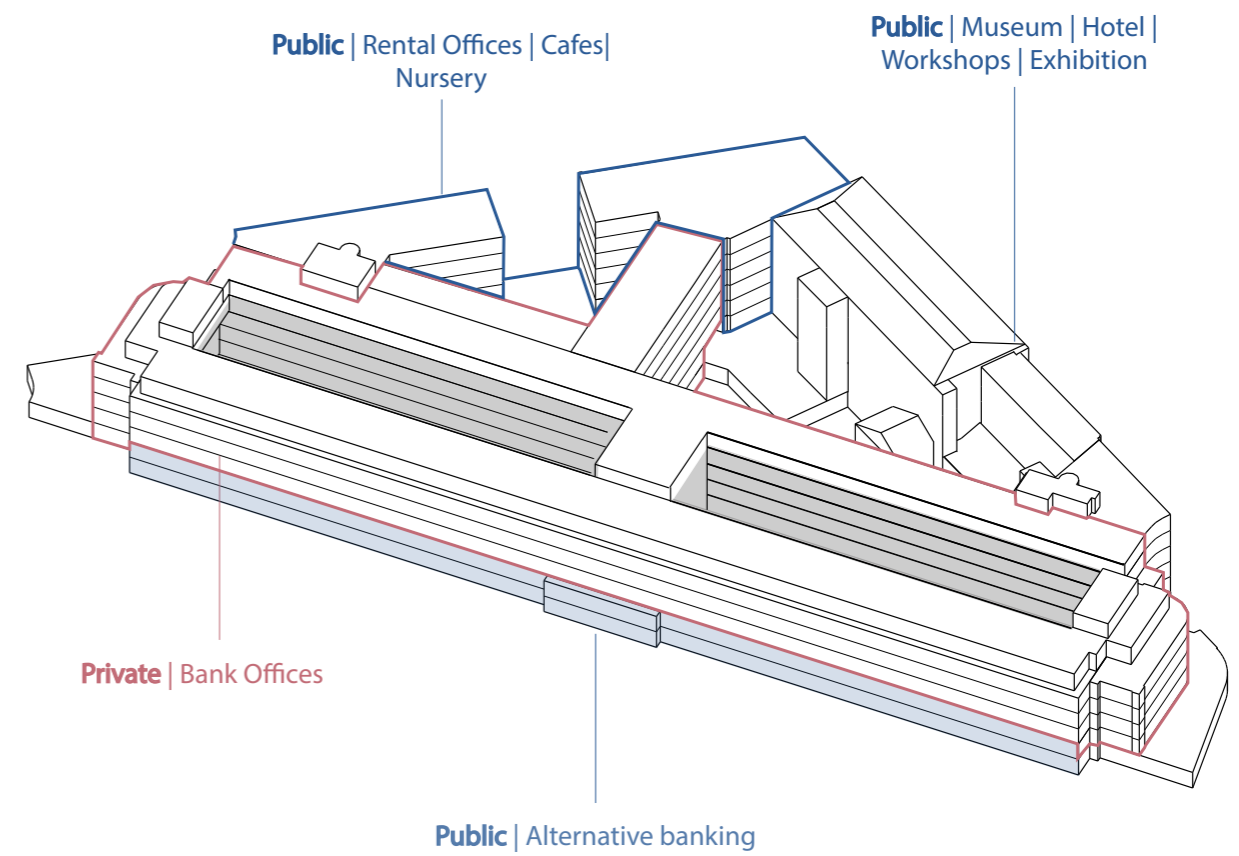
Design Proposal
Removal of Existing Volumes



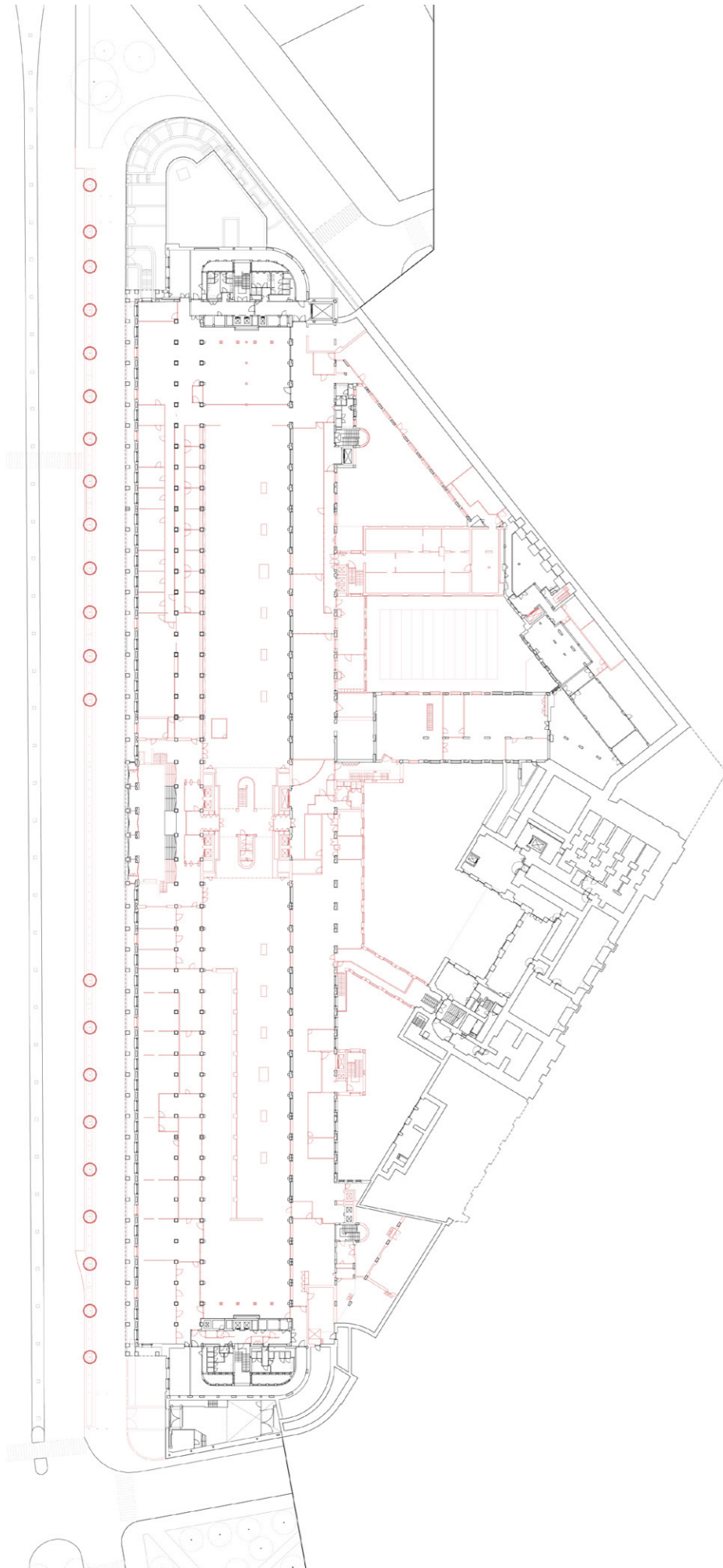
Design Proposal
Addition of New Volumes



Design Proposal
Addition of New Volumes

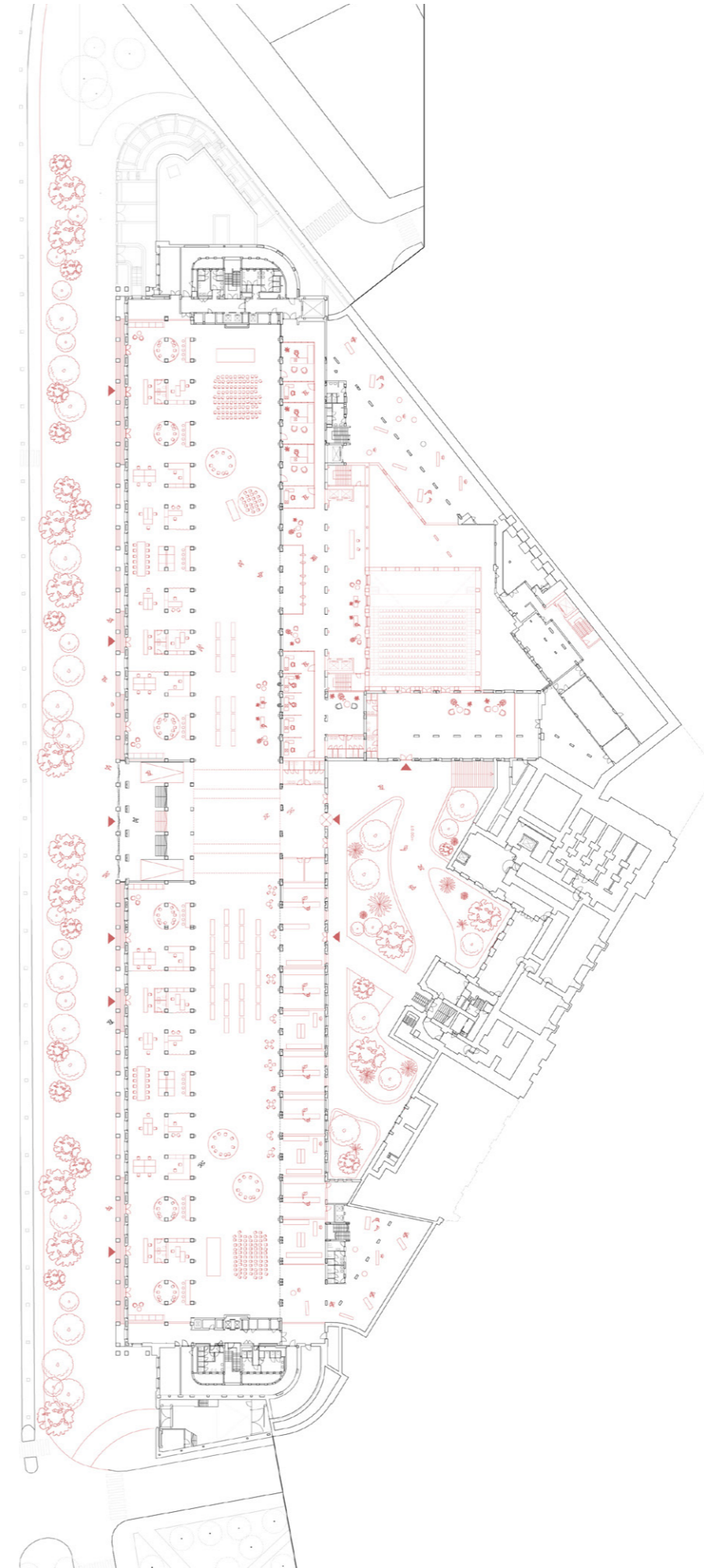


Programmatic Distribution
Public Vs. Private



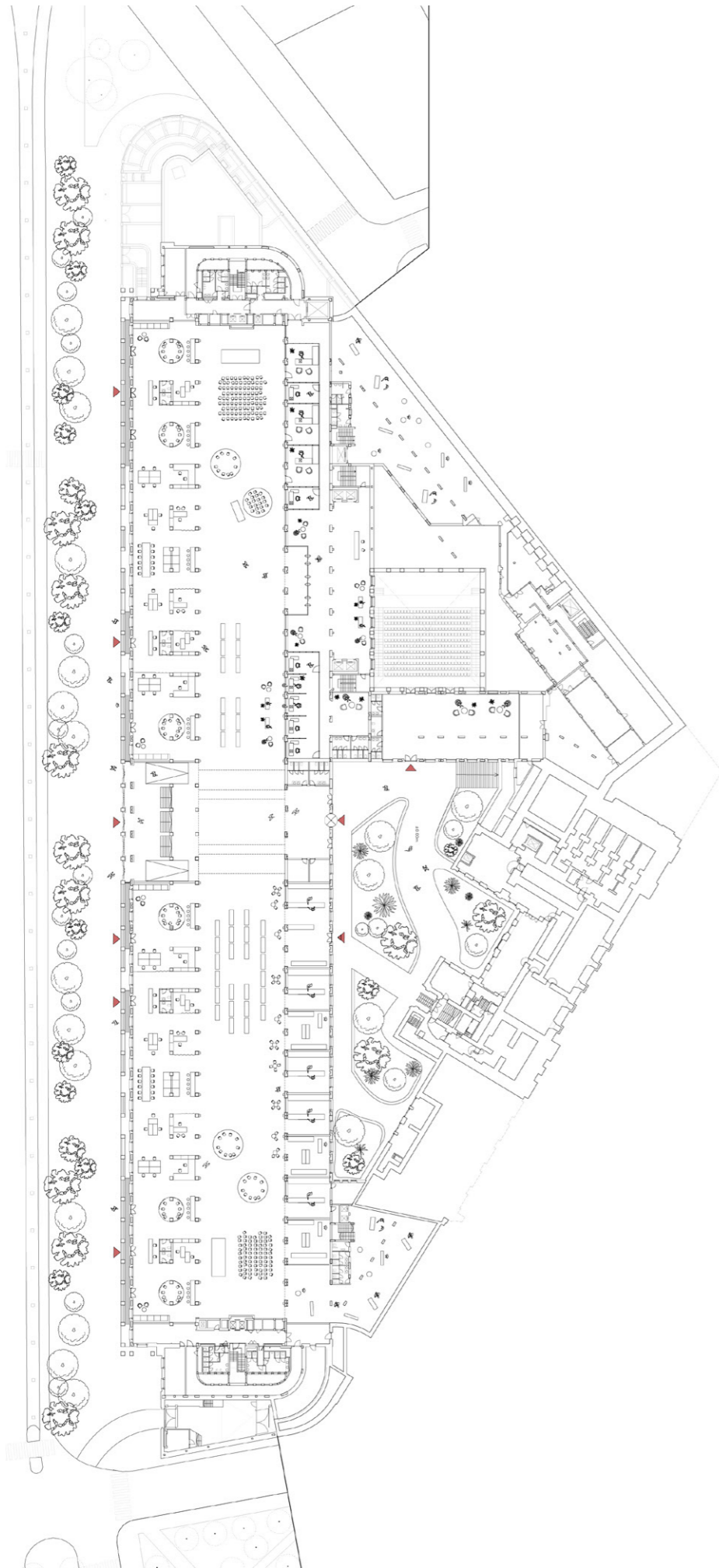
Ground Floor Plan

What is taken away



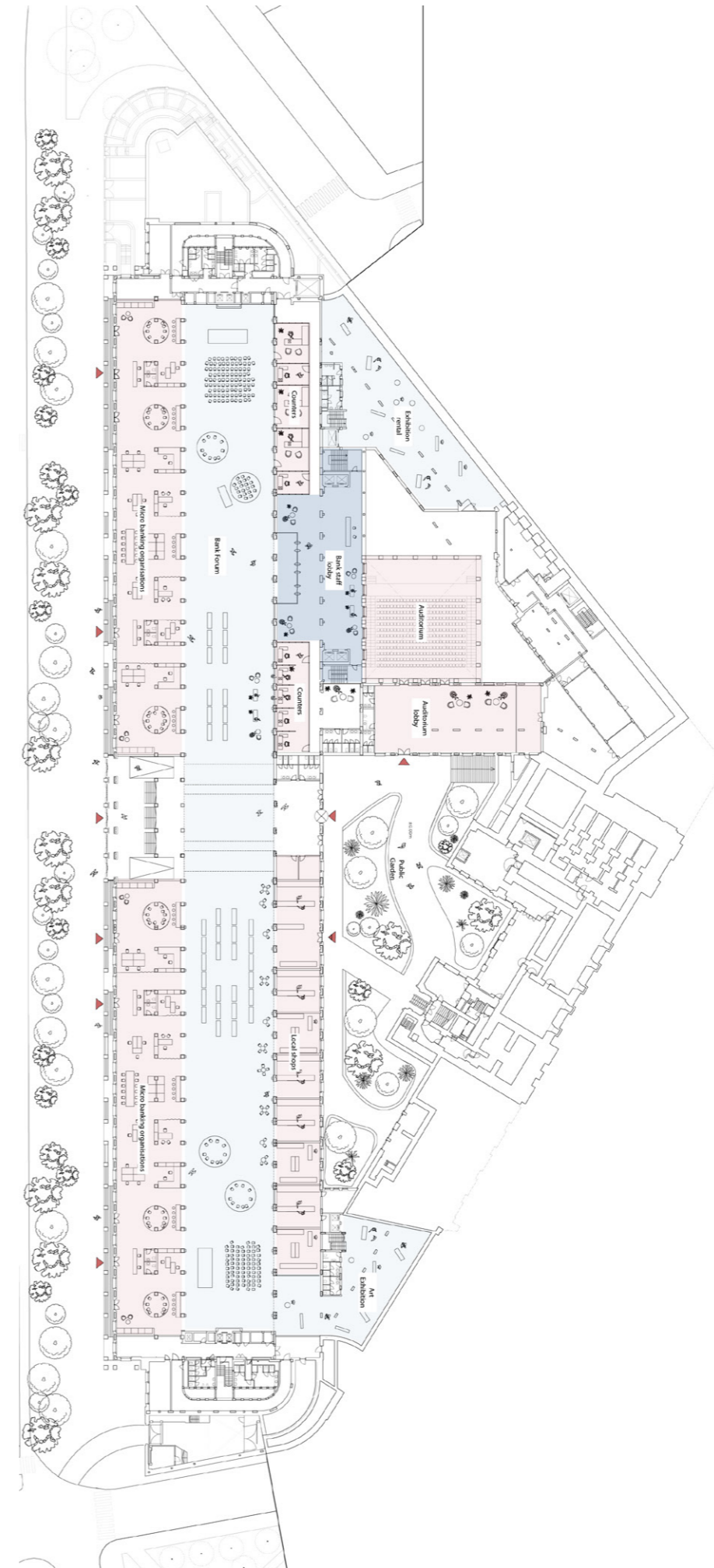
Ground Floor Plan

What is added

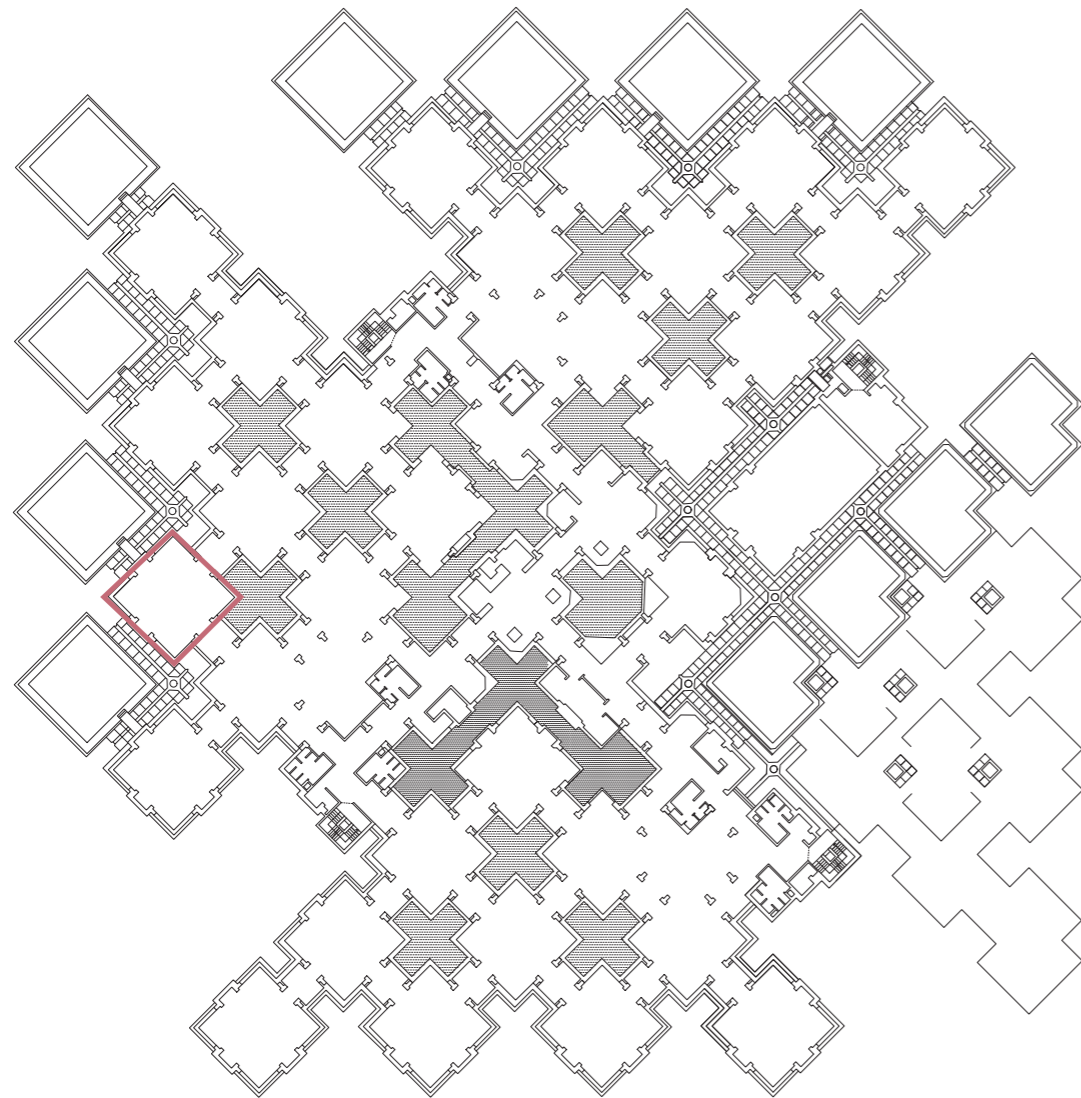


Ground Floor Plan

Design Proposal

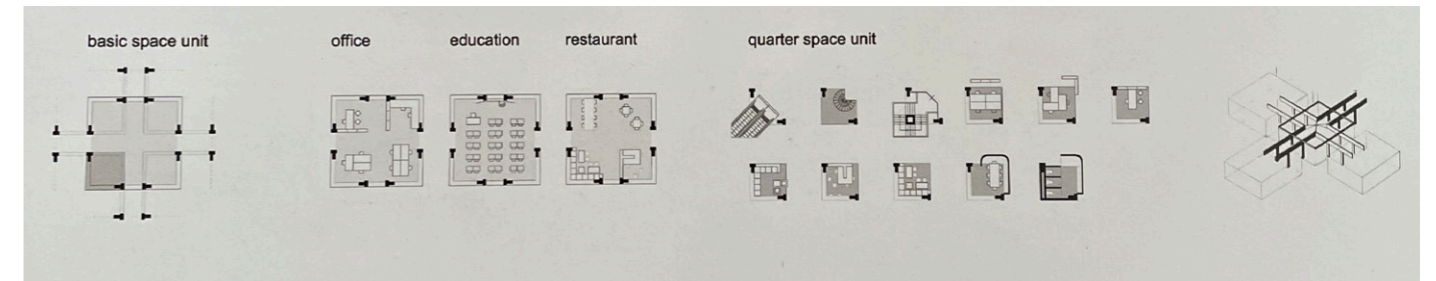
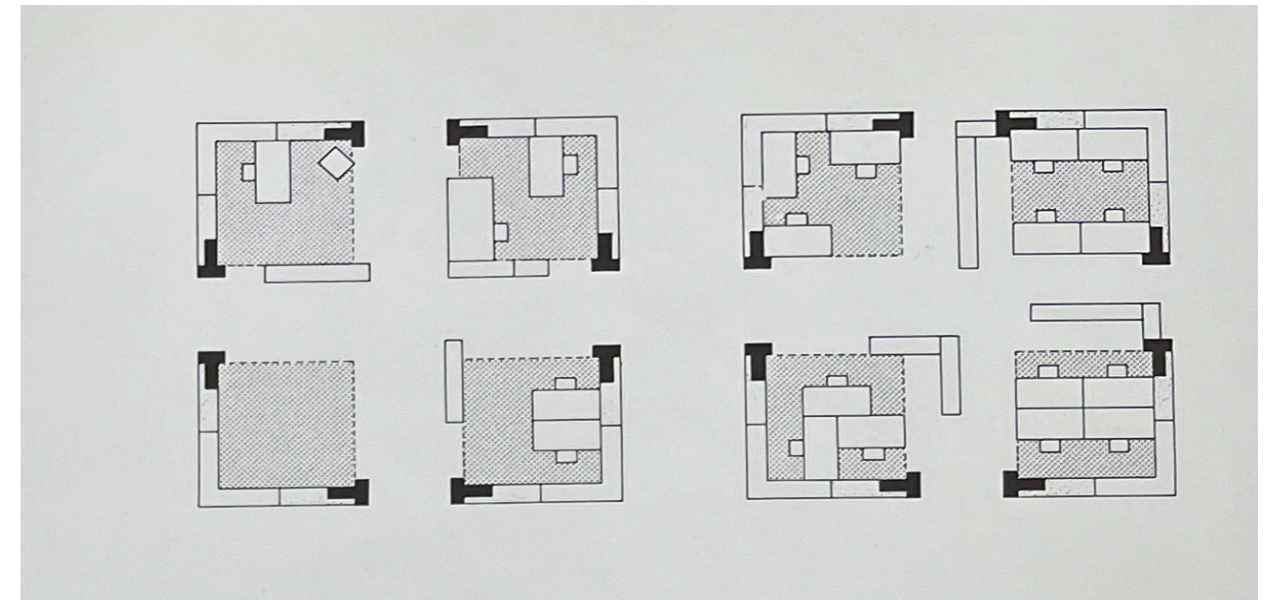
Ground floor plan -
Programmatic Distribution

What I have aimed to create is an interrupted public interior in the banking hall. Without the middle core, there are two crossed main axes: one towards the garden and the other is the city forum. On this side of the banking hall, I have designed a plan which is hosting organizations all related to alternative banking. Some of them are associated with time banking systems and services, others with environmental care or homeless people where people could volunteer their time to take part in their activities. Since the bank accommodates local currencies, this segment of the banking hall is hosting local communal shops where this local currency could be used. On the other side, there are the bank counters for the public and the new entrance for the employees. In order to devote the ground floor completely without interrupting the security line of the bank, this new intruded entrance is created. On the back, we see the elevated courtyard with a garden which is leveled with the banking hall and is publicly accessible. The second courtyard now has an auditorium underneath which could be accessed from the garden at this point.

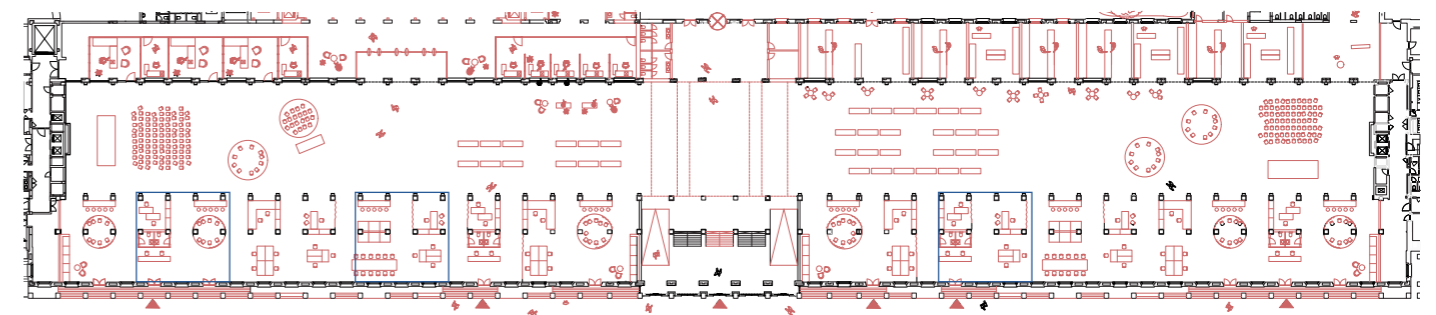


Ground floor plan, Centraal Beheer - Hertzberger

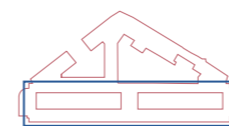
In our first quarter our group worked on the model and drawings for Centraal Beheer. The plan consisted of this repeated 9 by 9 square structure and within different functions were hosted. This created an almost infinite structure that could easily expand if there is a need to and easily could be transformed into a different program. Some of the units hosted different desk layouts, kitchens, restaurants, services and many other. I used this typology as inspiration for the organizational layout of the ground floor and for the bank offices above.



Herzberger, H., McCarter, Robert. Herman Herzberger. Nai010 Publishers, [2015]



Ground floor plan NBB



This is a zoom in of the ground floor plan. As we can see following similar example, since the building is 200meters long, following the grid created by the columns, I have decided to organise this space. Some of the squares contain more service space, other only desk layout or could be more of a meeting space as in this case.



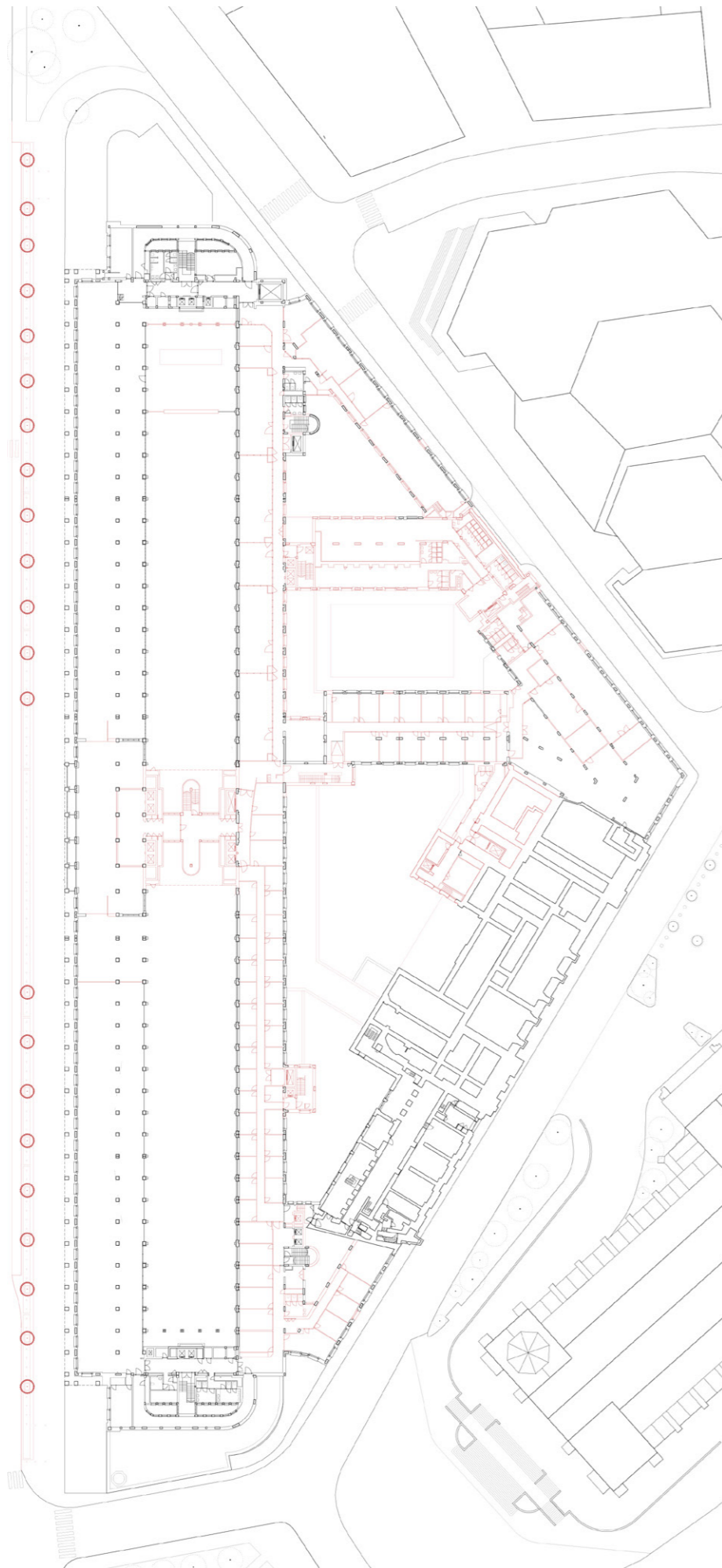
Photograph of existing banking hall in NBB

The public is not very welcomed in the current building of the bank. There are a few bank counters in this enormous banking hall for money exchange. The rest is inefficiently used and empty.



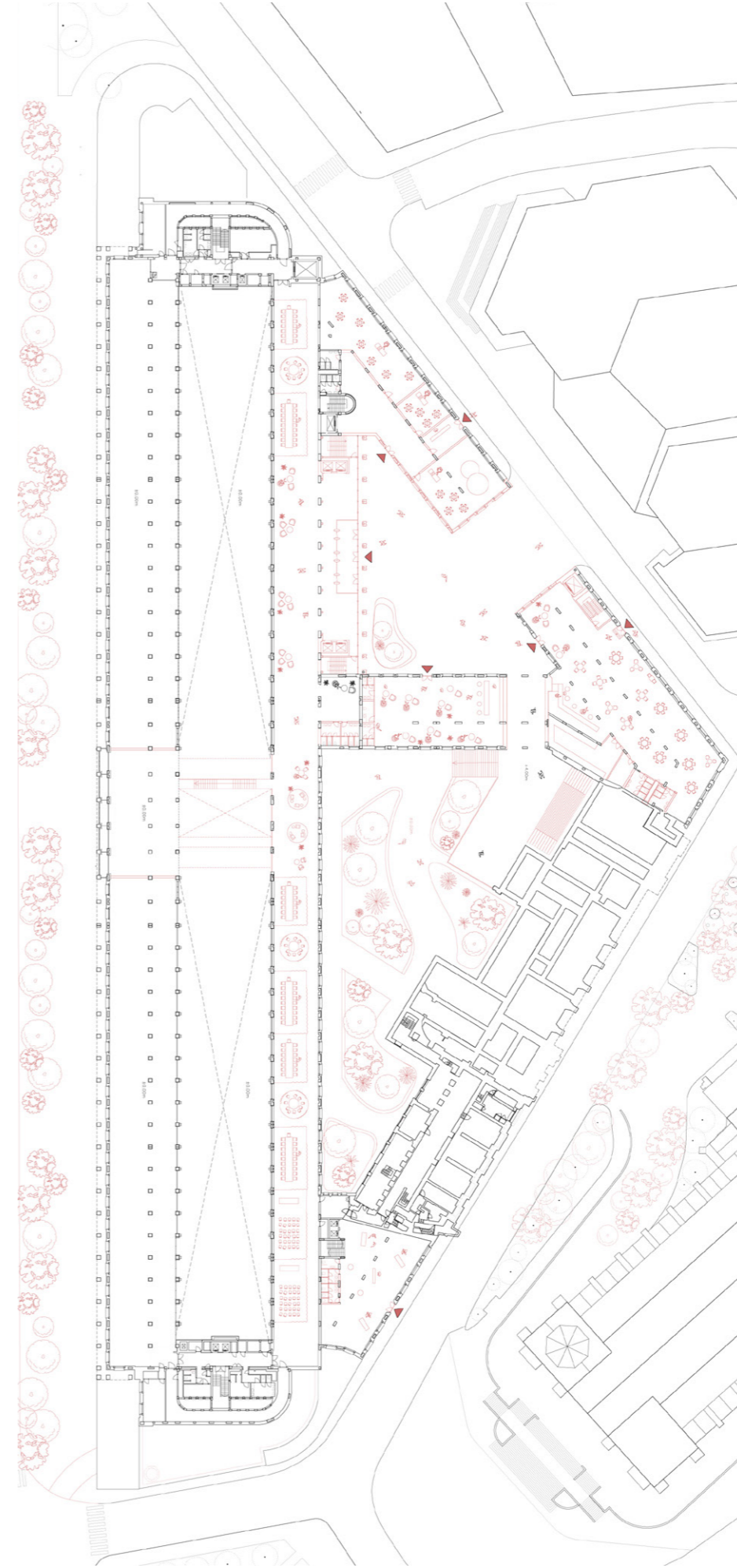
View of new banking hall

The new banking hall is a lively place, where people interested in micro banking could meet and exchange ideas and services. On the right is also positioned the new entrance for the bank employees on the ground floor.



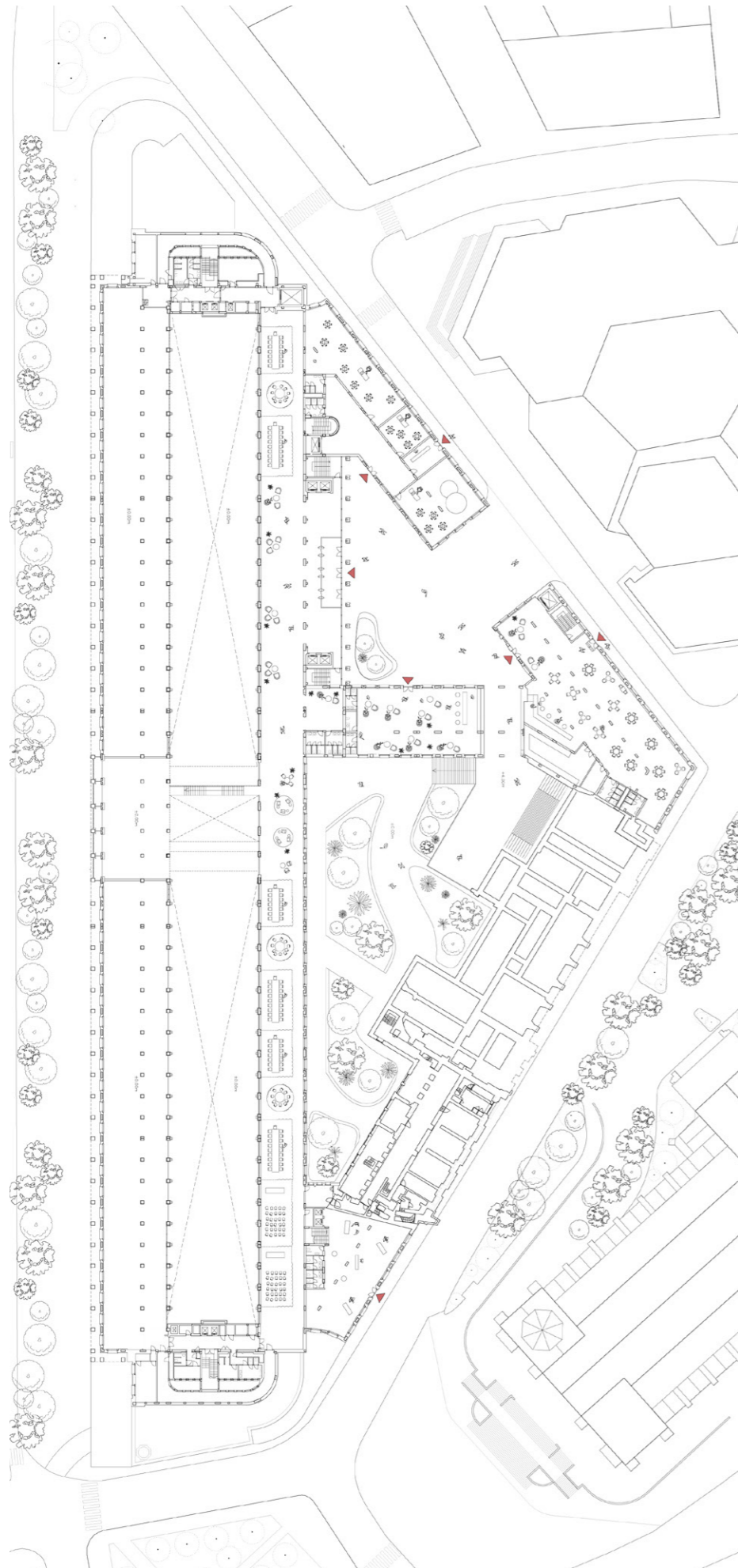
First Floor Plan +4.00m

What is taken away



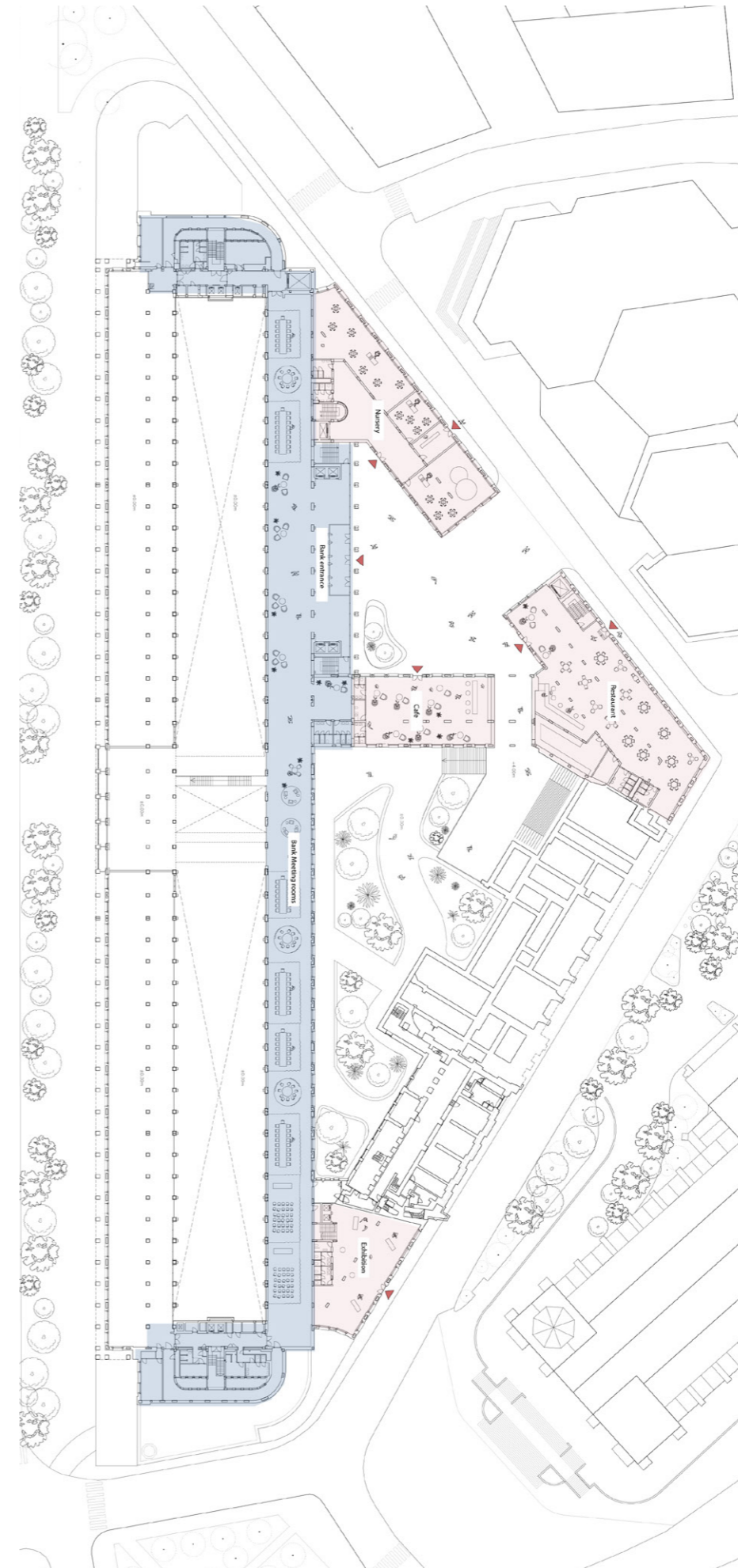
First Floor Plan +4.00m

What is added



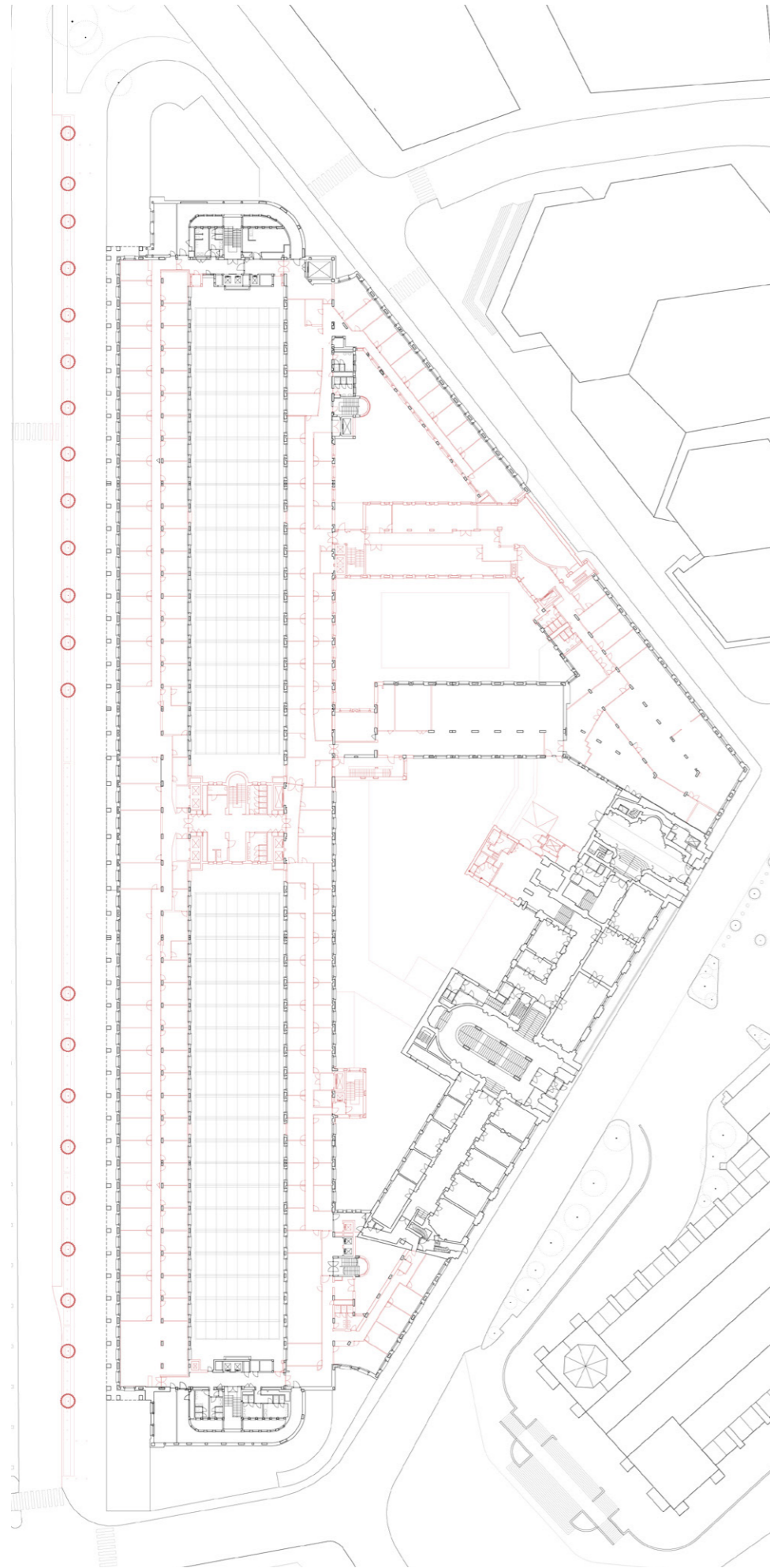
First Floor Plan +4.00m

Design Proposal



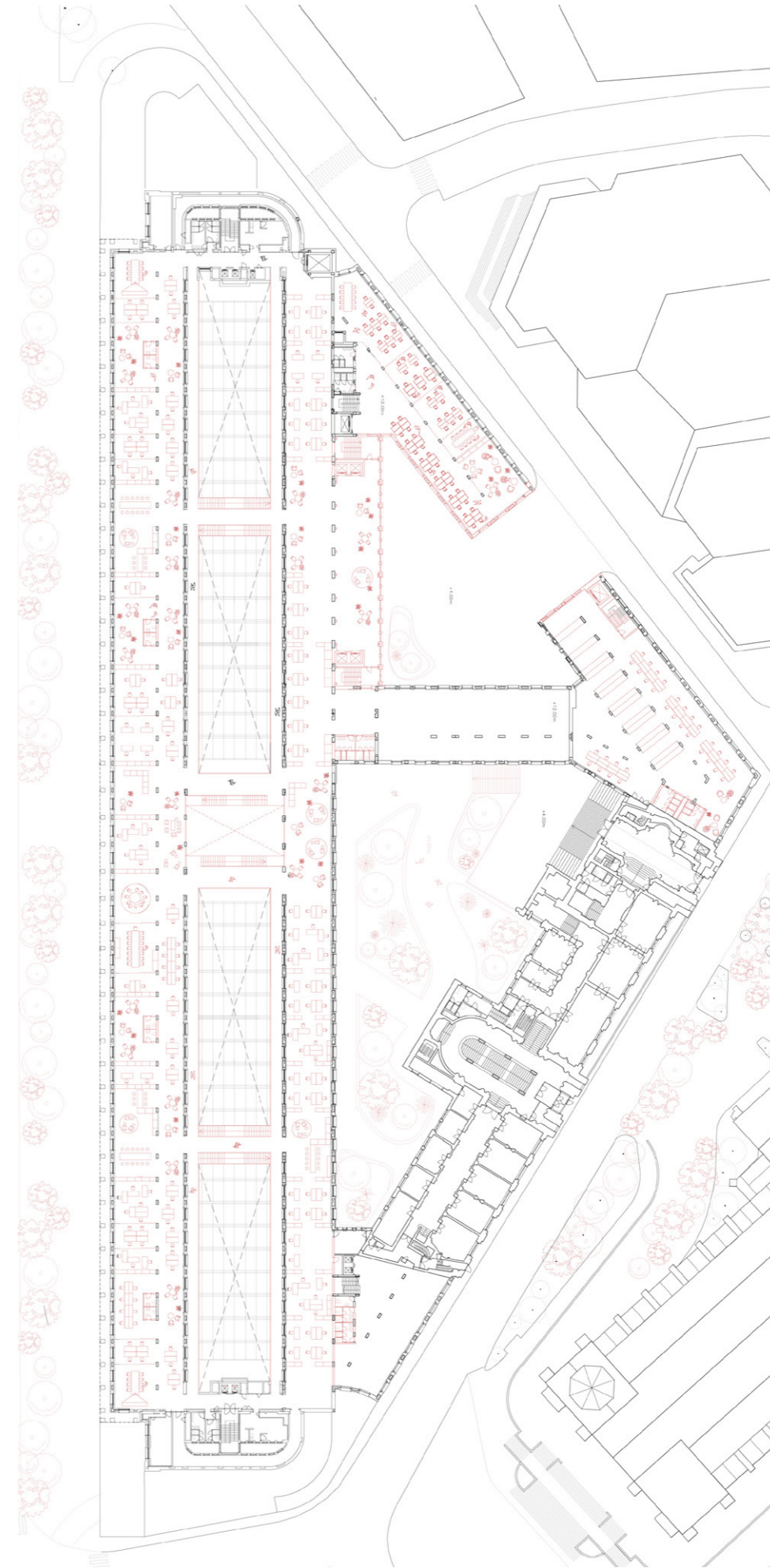
First Floor Plan +4.00m -
Programmatic Distribution

This new elevated courtyard is connected to a small square in front of the palace which connects its existing entrance to both levels, to the banking hall and to the new courtyards and entrance to the bank. I have activated all the edges of the mega structure by removing all fences and providing public functions towards the street. There is a restaurant and nursery in this two building. As for the one in the middle it is a cafe which entrance is again directed towards this new elevated courtyard. Public rooms for the bank in mezzanine.



Typical Floor Plan

What is taken away



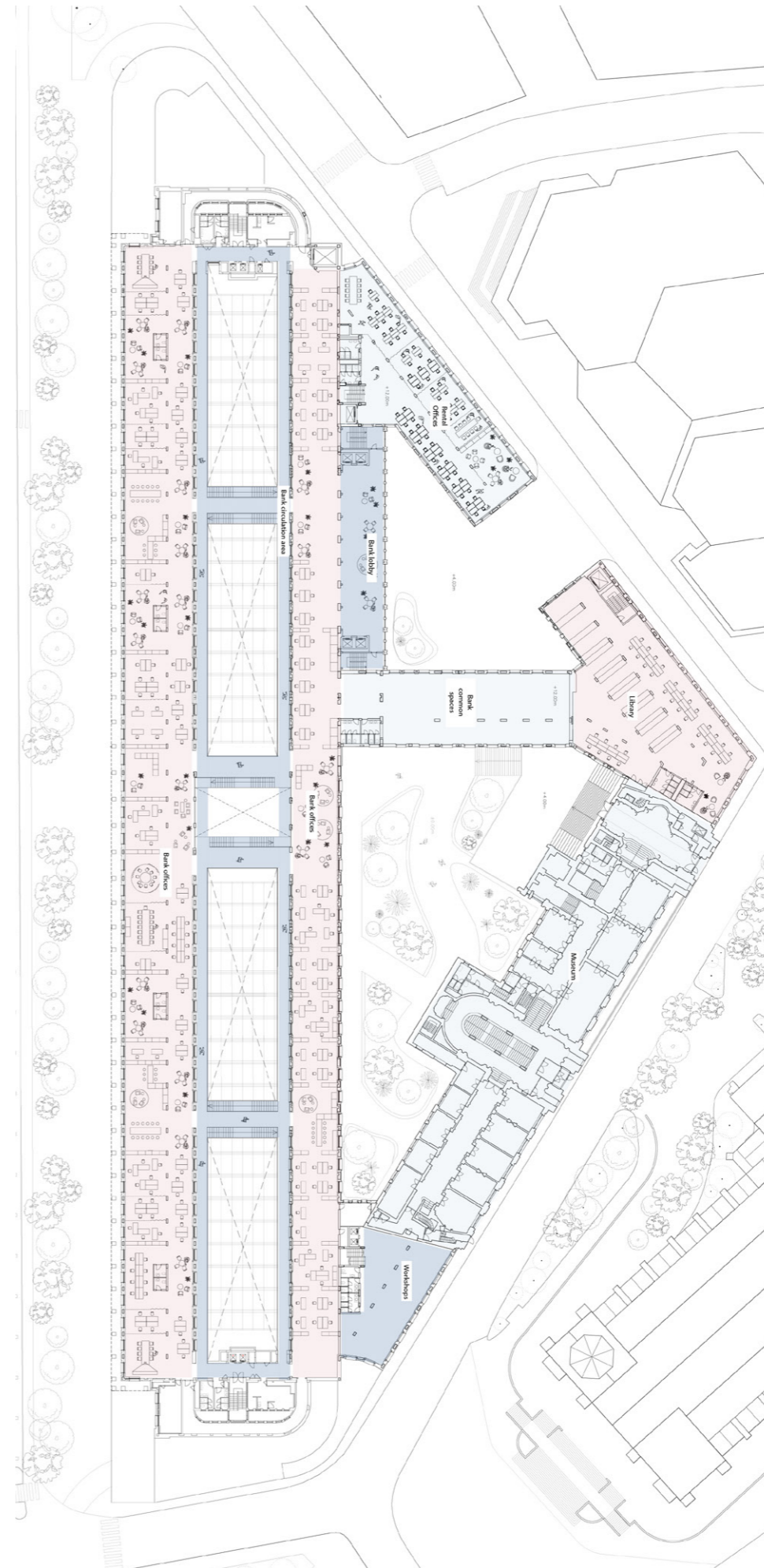
Typical Floor Plan

What is added



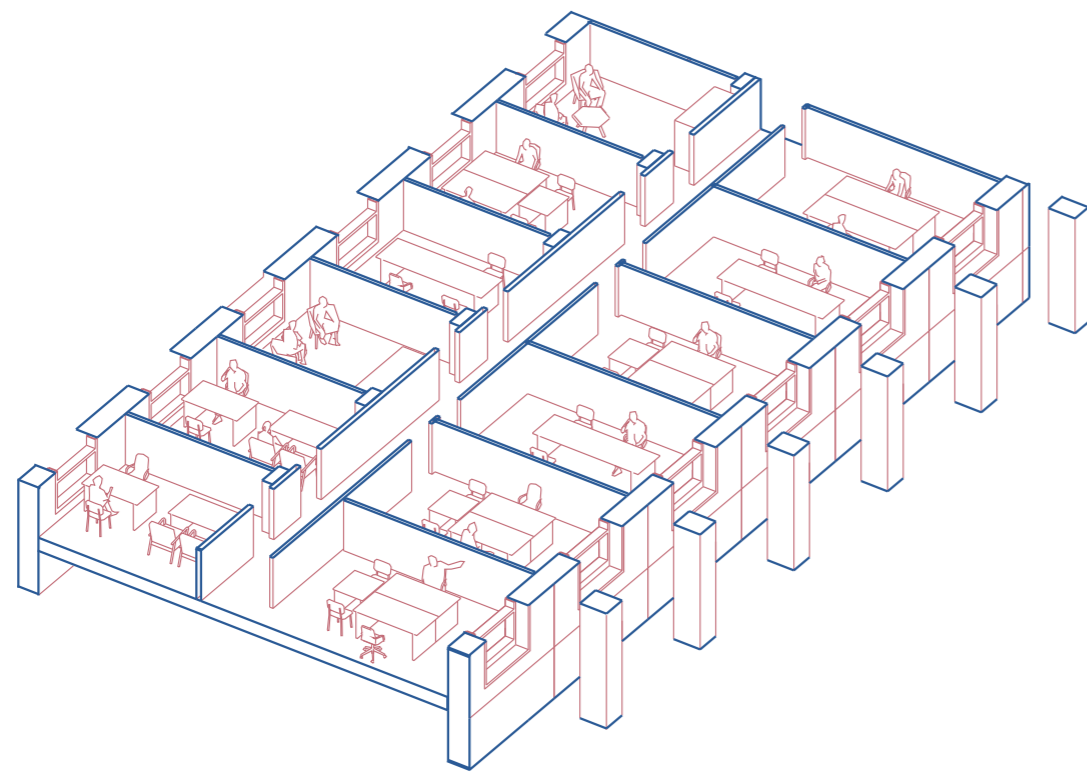
Typical Floor Plan

Design Proposal



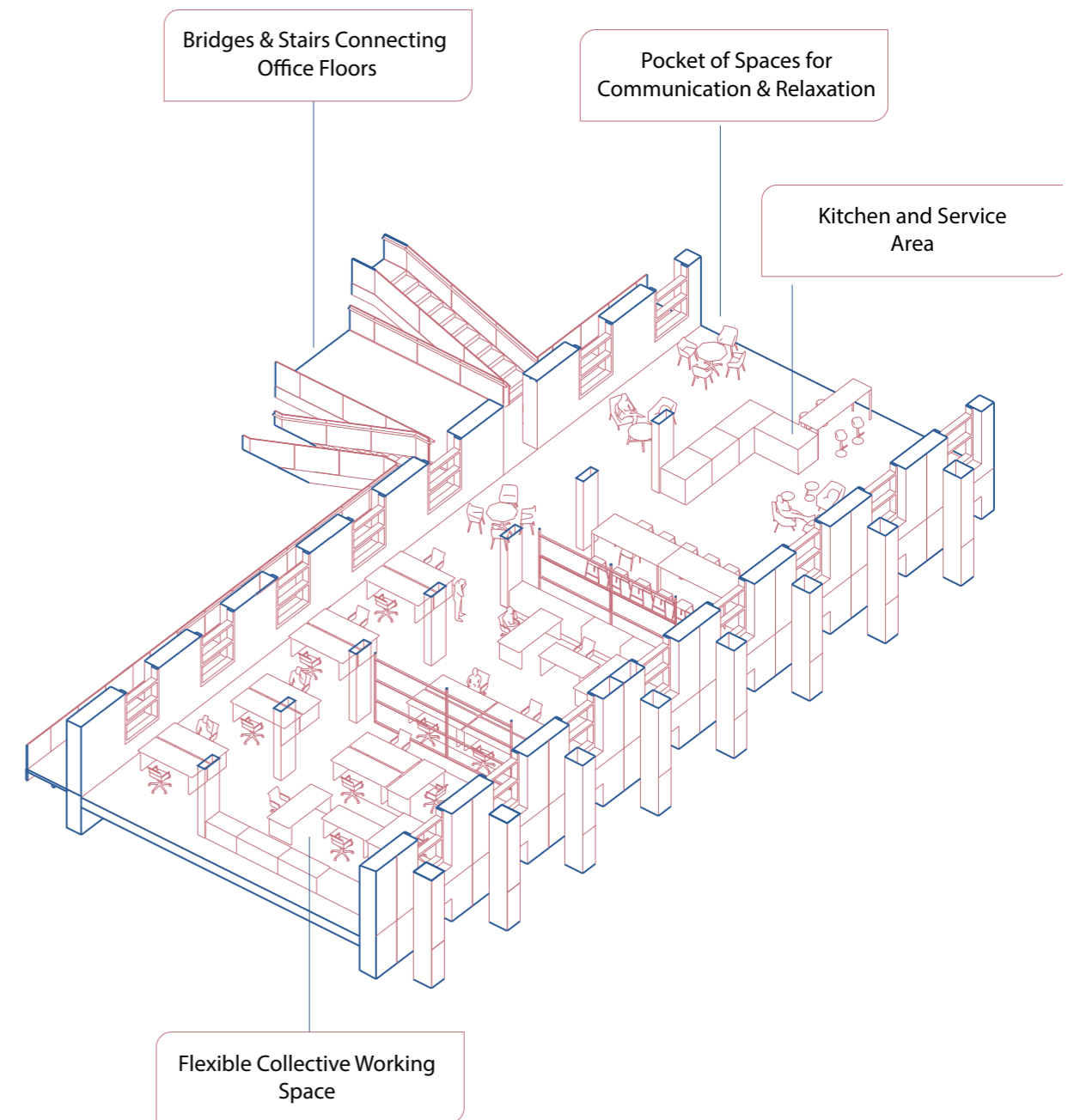
*Typical Floor Plan -
Programmatic Distribution*

The typical office floor plan of the bank is now organized based on the circulation being moved in the atrium (in order to utilize them) which gives enough space for an open floor plan which could be easily appropriated and adopted.



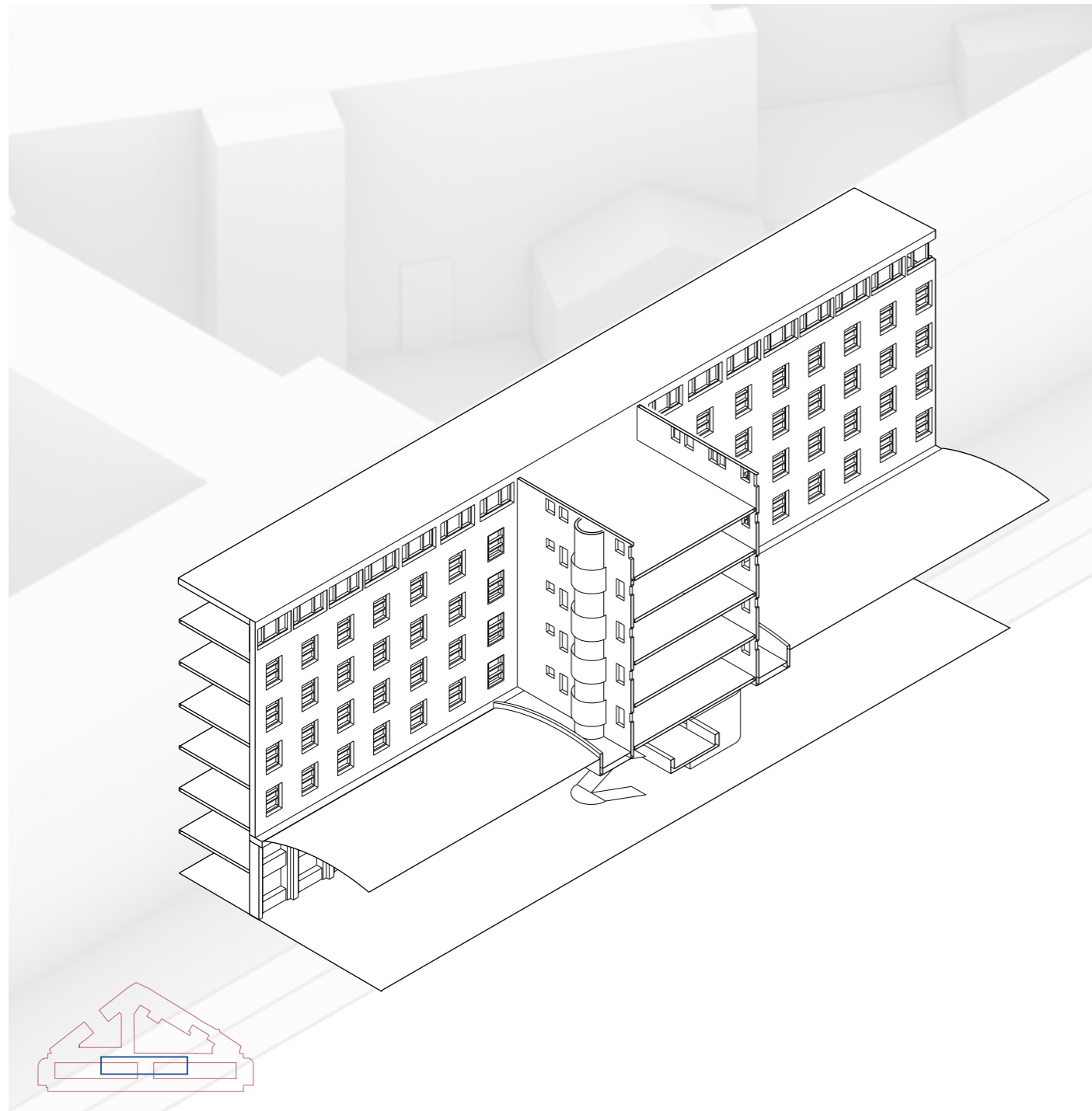
Axonometry drawing. Existing office layout

The office of the bank is characterized with separate enclosed cells which accommodate different functions such as working arrangements, recreation spaces, kitchen units, managerial offices. They differ in size and orientation, some of them look at the internal courtyards, others at the atrium or the main boulevard.



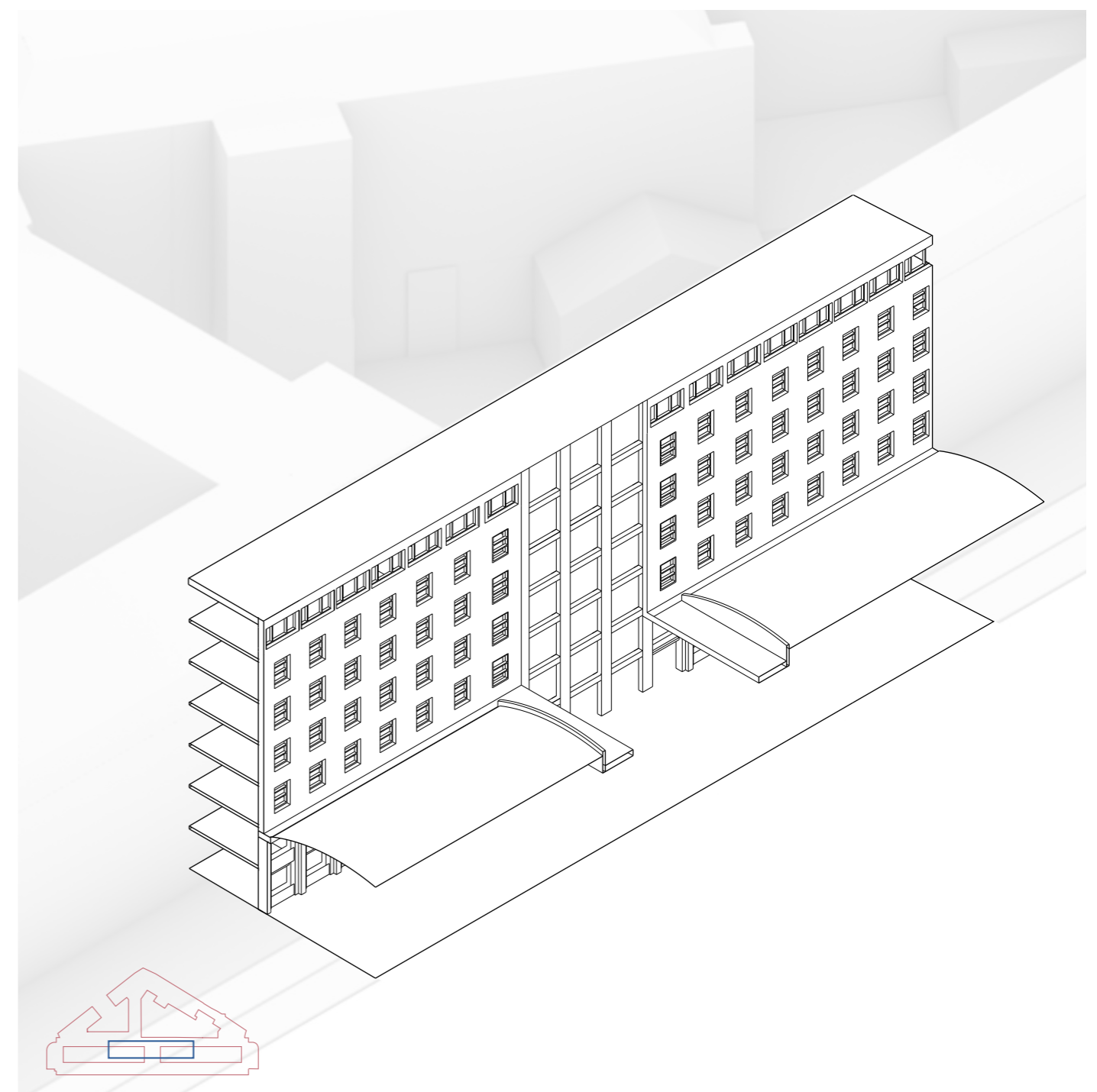
Proposed Bank Office Interior

I have provided an office environment with both open floor and semi-closed offices both for the bank employees. The offices are now designed without corridors as they were before in order to foster the circulation happening in the atrium's bridges, galleries and new middle core.



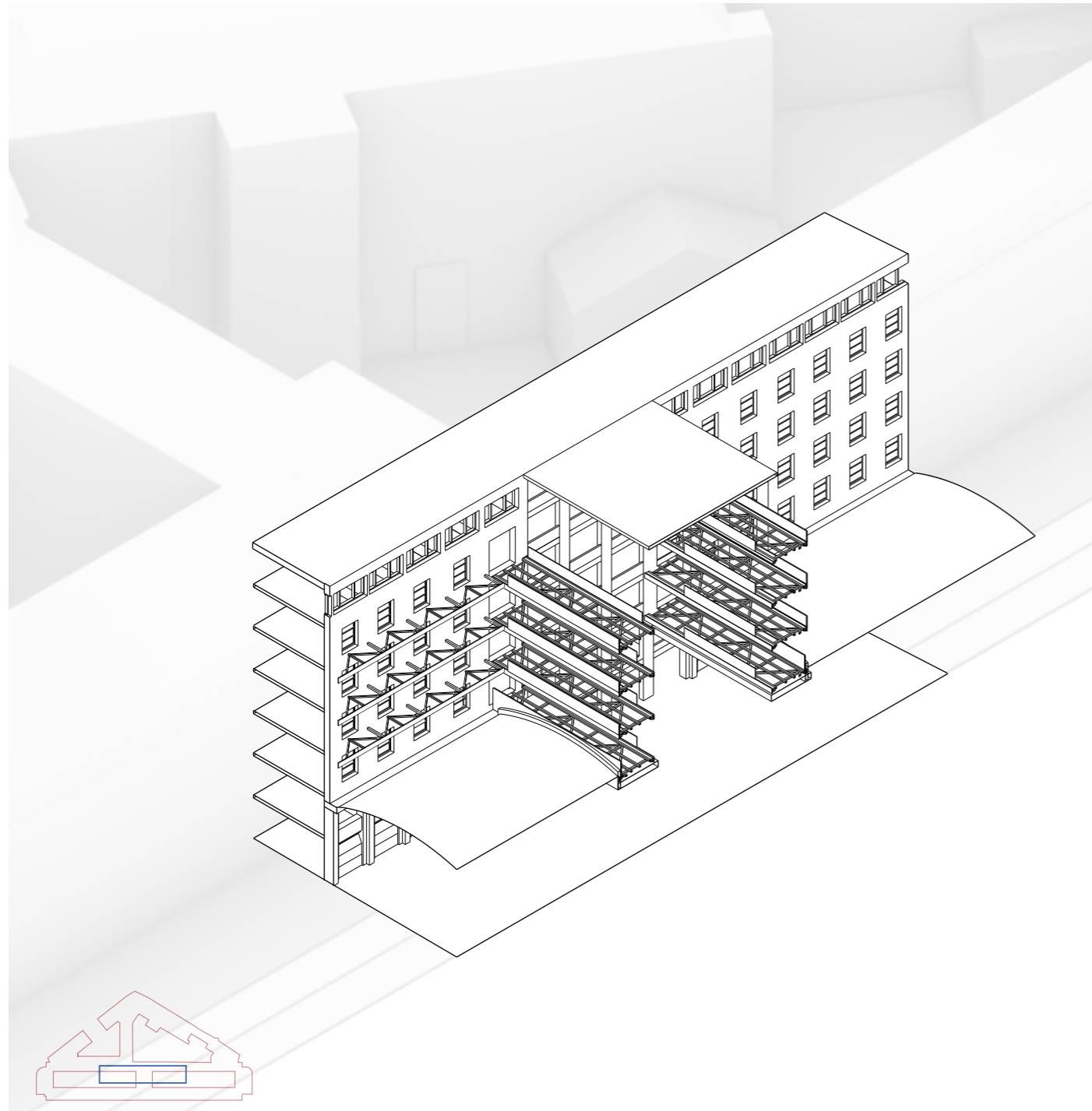
Construction process of middle core and bridges

In order to develop a new atrium and utilize the existing ones I have removed the existing core as the glass roof as left out as they are. This leaves exposed structure and empty space in the middle which unites atrium and leaves banking hall as one long uninterrupted public interior



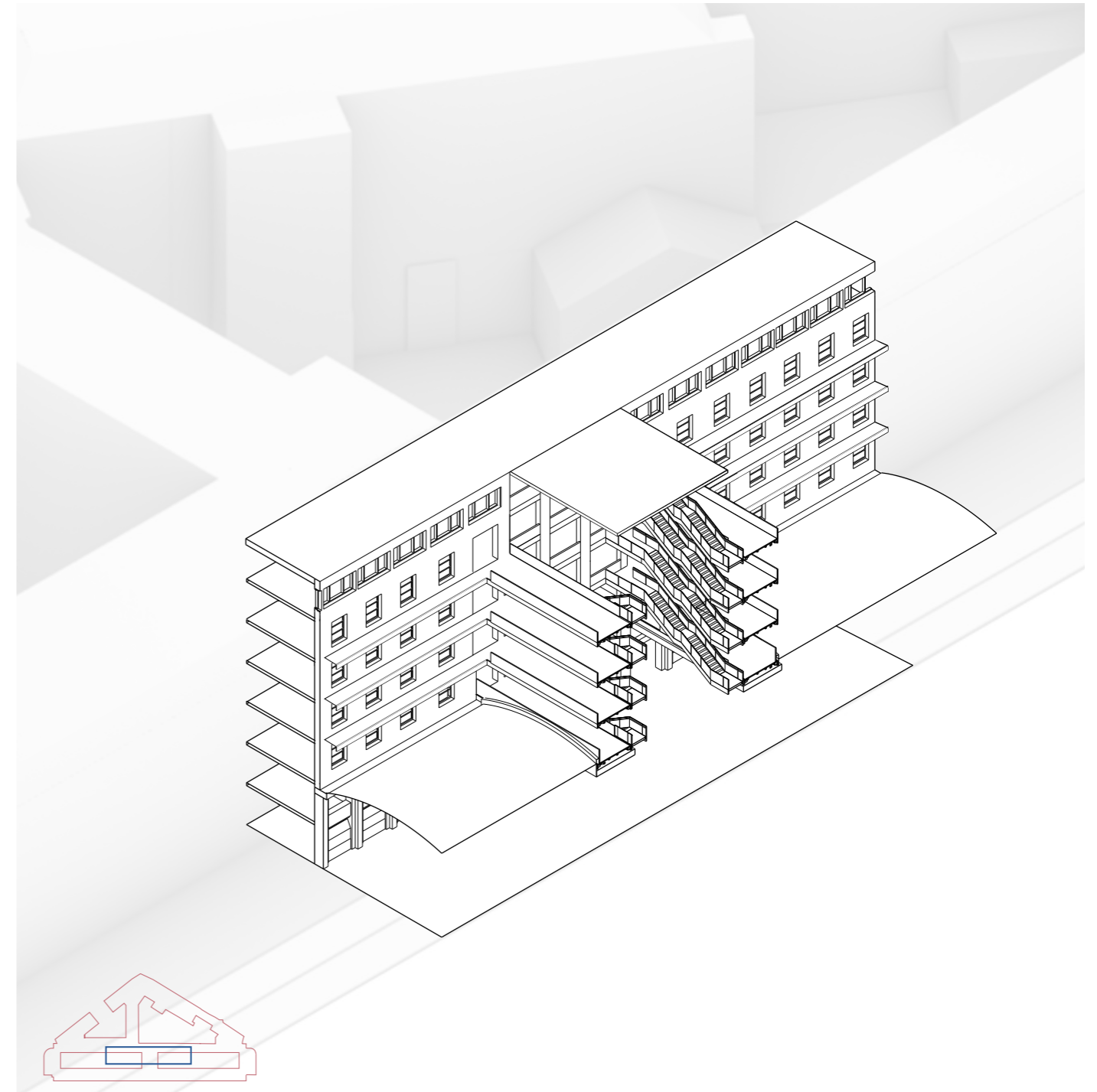
Construction process of middle core and bridges

I am preserving the existing iconic roofs of the banking hall as well as the glass roofs which cover the atrium.



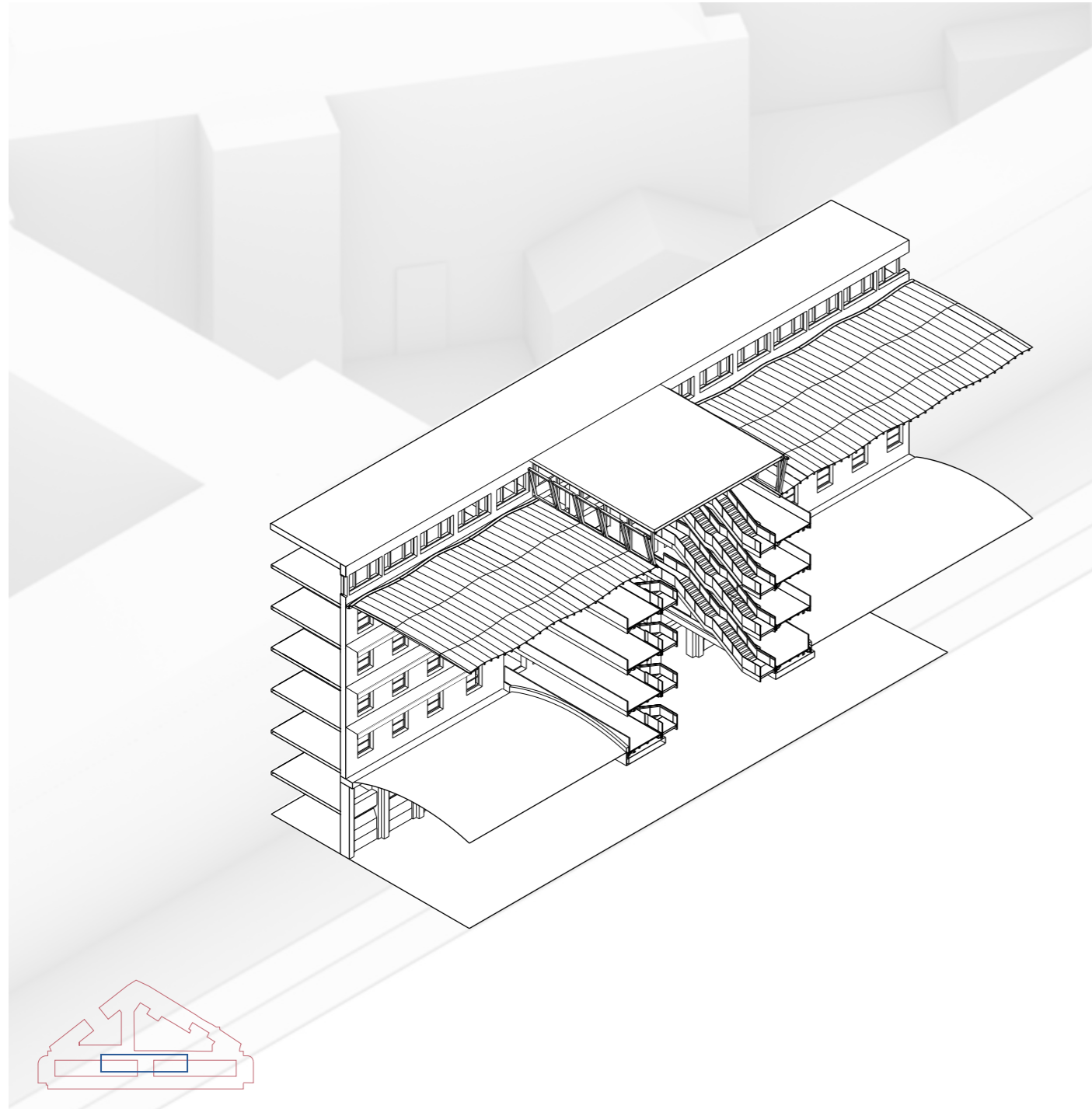
Construction process of middle core and bridges

The structure for the new vertical connections are added as well as the structure for the galleries which will now host the circulation of all the office floors



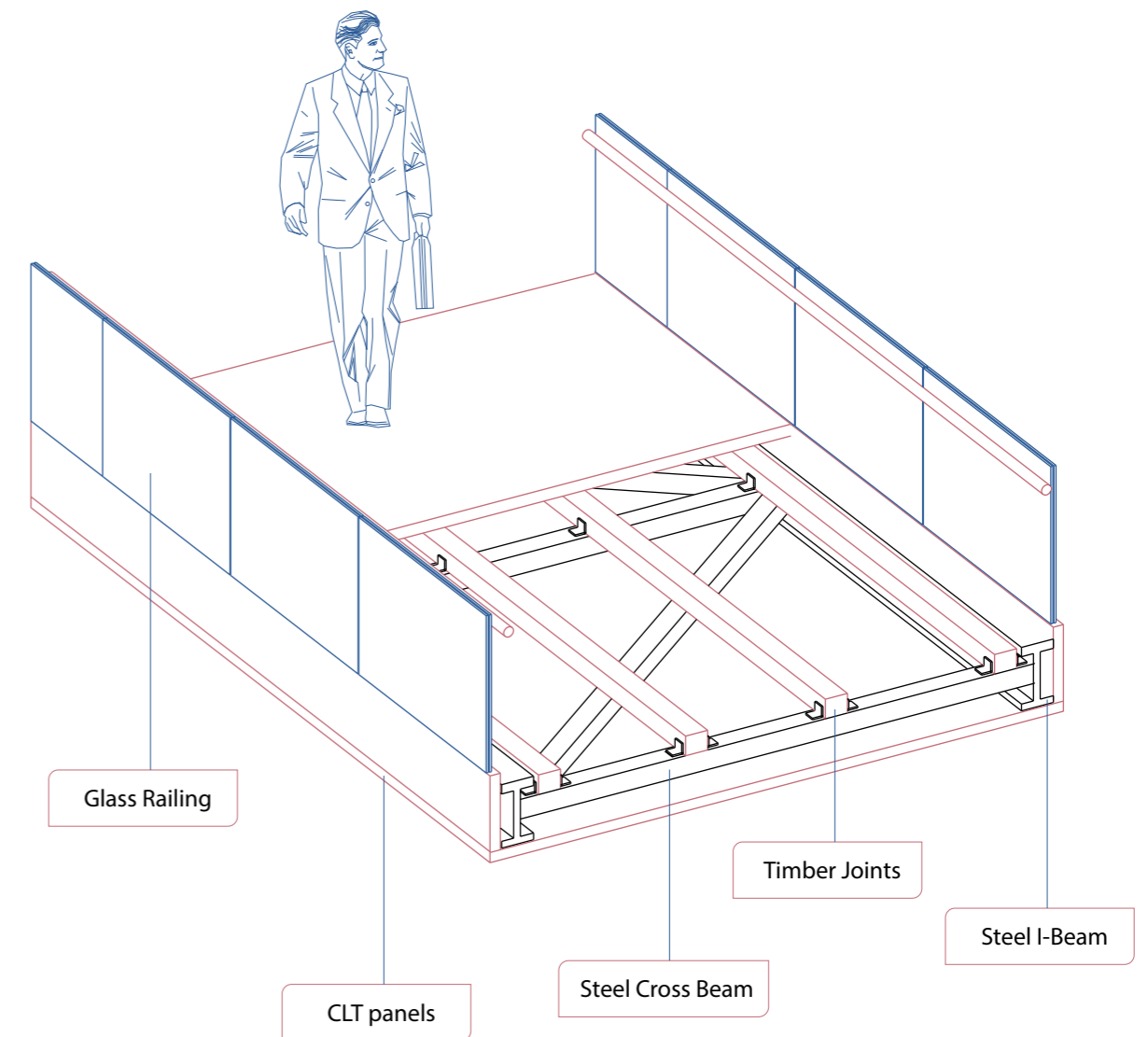
Construction process of middle core and bridges

The bridges and galleries are covered with CLT-plates and new vertical connections are inserted in the middle core which will connect all the office floors.



Construction process of middle core and bridges

This is the final outcome; there is new solid roof added which is one floor higher from the existing wavy glass roof. This is for functional and climatic purposes. This core becomes a mediator between the office environment and the alternative banking public environment. It gives a visual access to the bank.



Construction detail of pedestrian bridges

This axonometry shows the construction of the pedestrian bridges which span from the two office plates and are positioned in the atrium. The structure includes two I-beams which are attached to the already existing structure of the bank. In between them there are steel cross beams. CLT-plates cover the whole structure from all sides and glass railings attach to them.



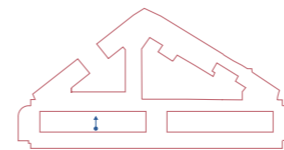
*Photograph of atrium in between office
the NBB*

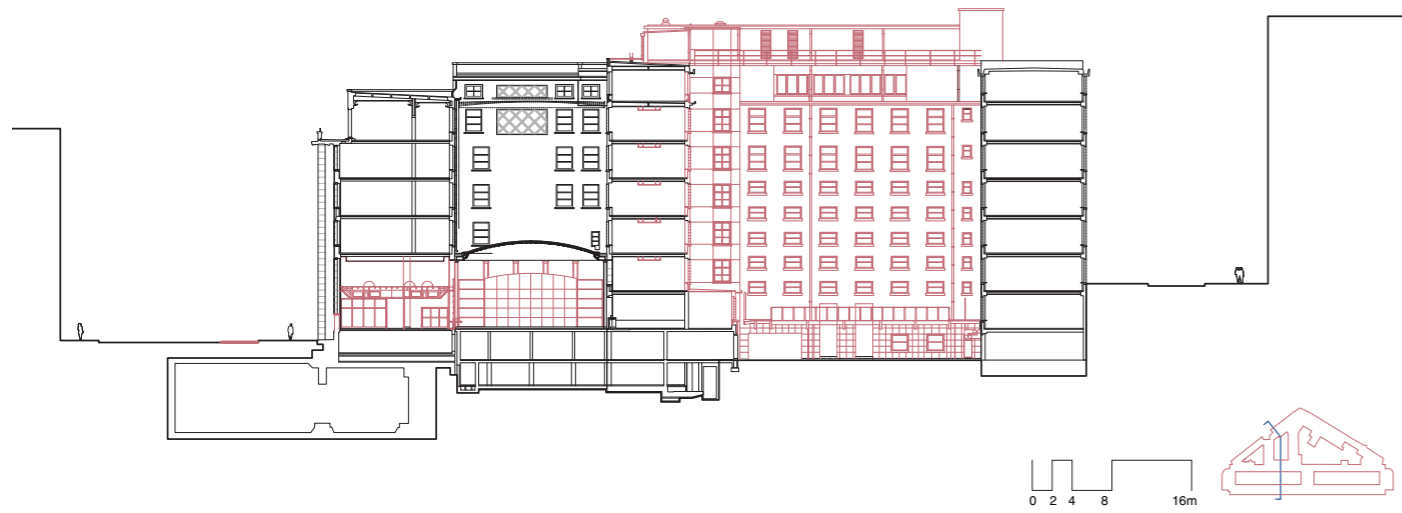
Inefficient use of atrium. It neither connects offices nor functions for climate control .



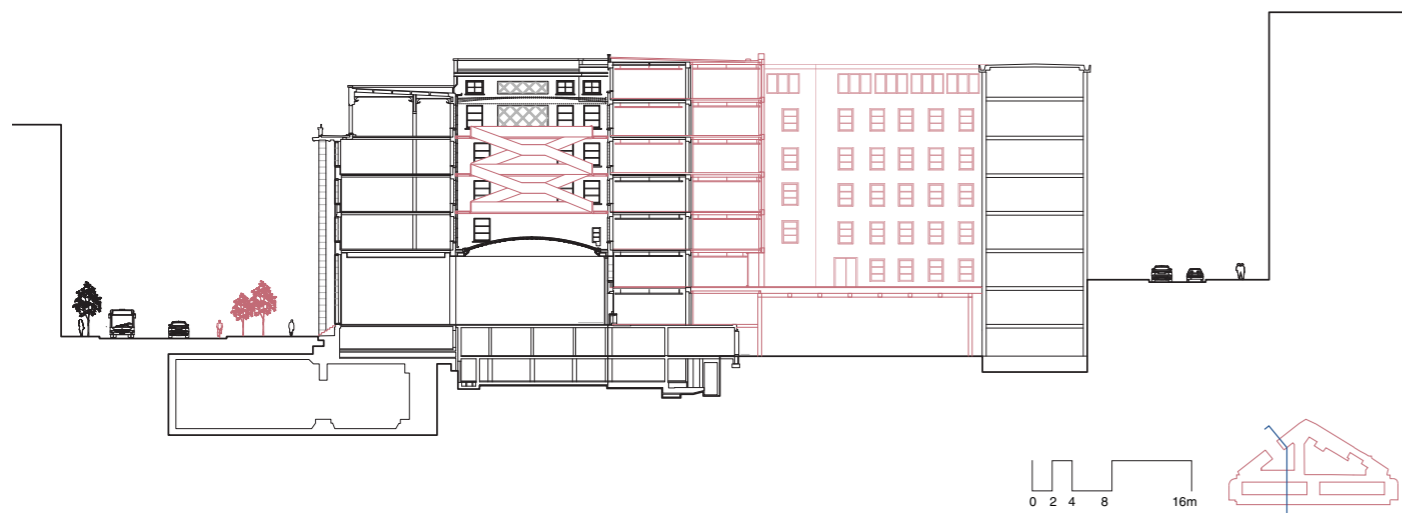
View showing new galleries and bridges in atrium

This is the final outcome; there is new solid roof added which is one floor higher from the existing wavy glass roof. This is for functional and climatic purposes. This core becomes a mediator between the office environment and the alternative banking public environment. It gives a visual access to the bank.

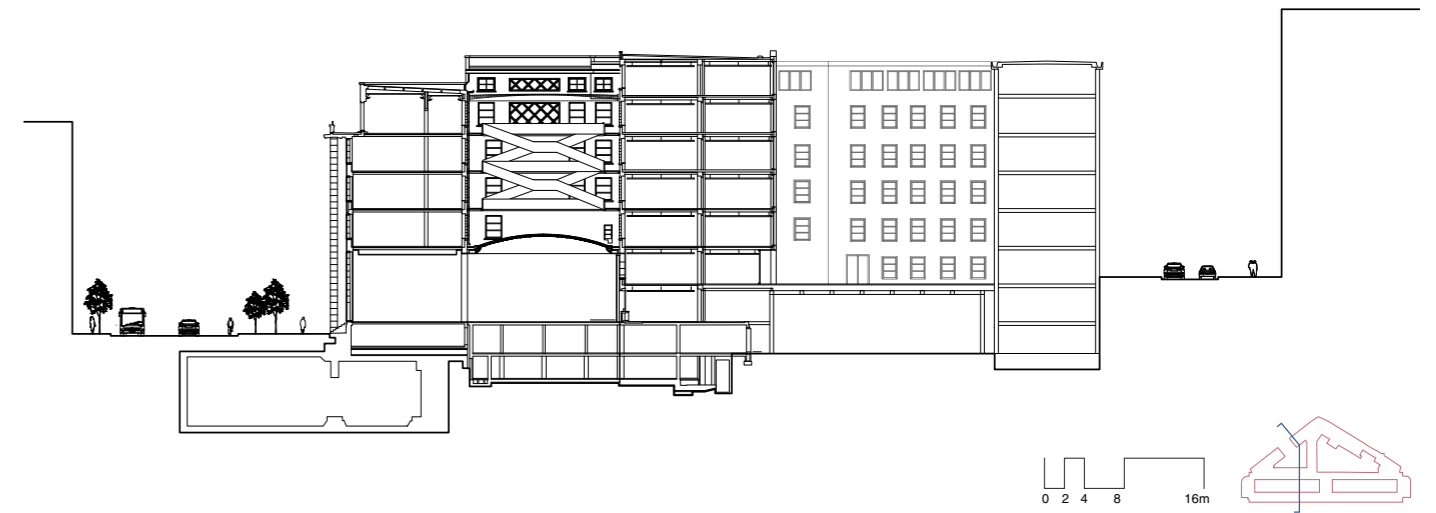




Section with what is removed

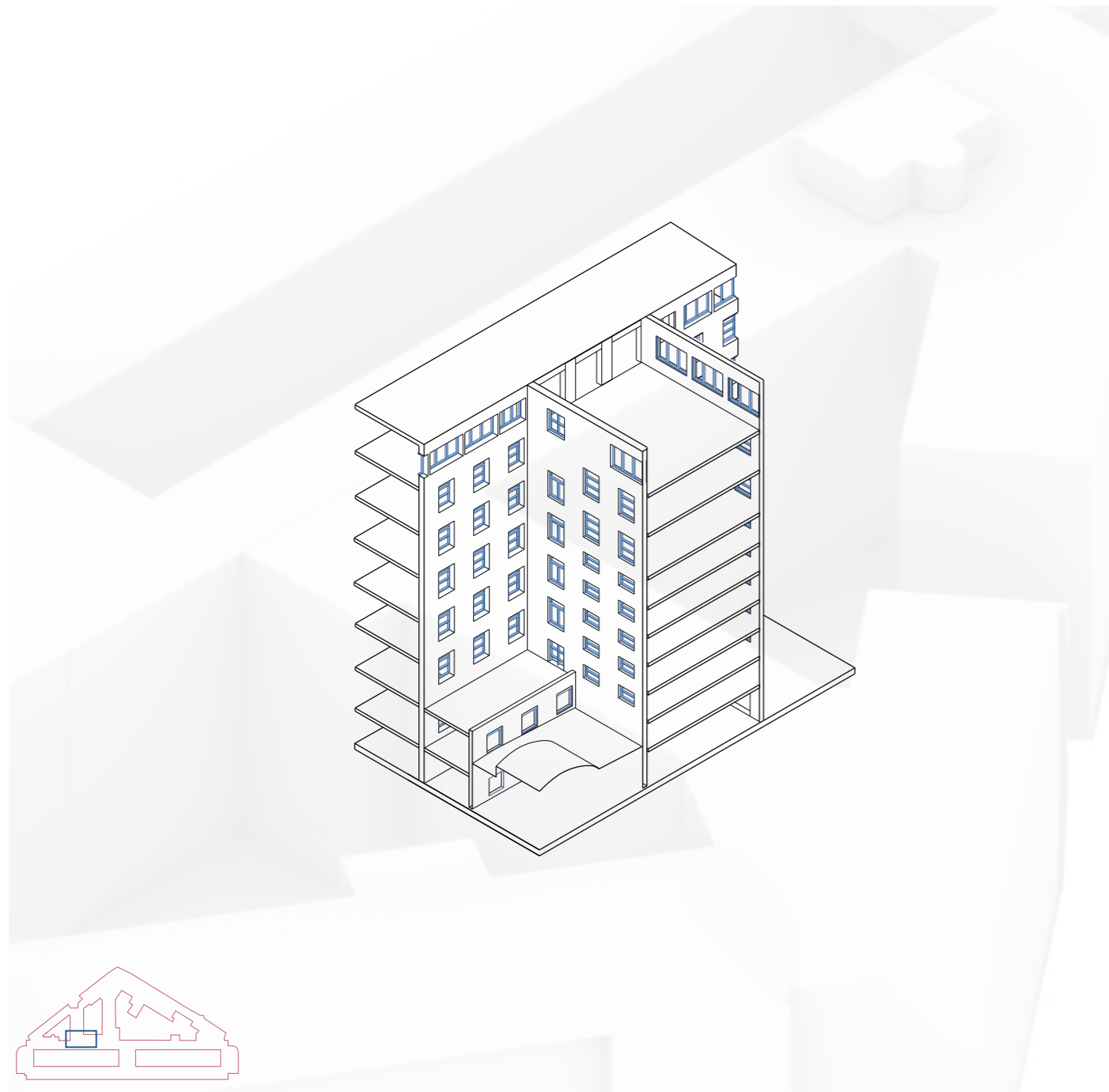


Section with what is added



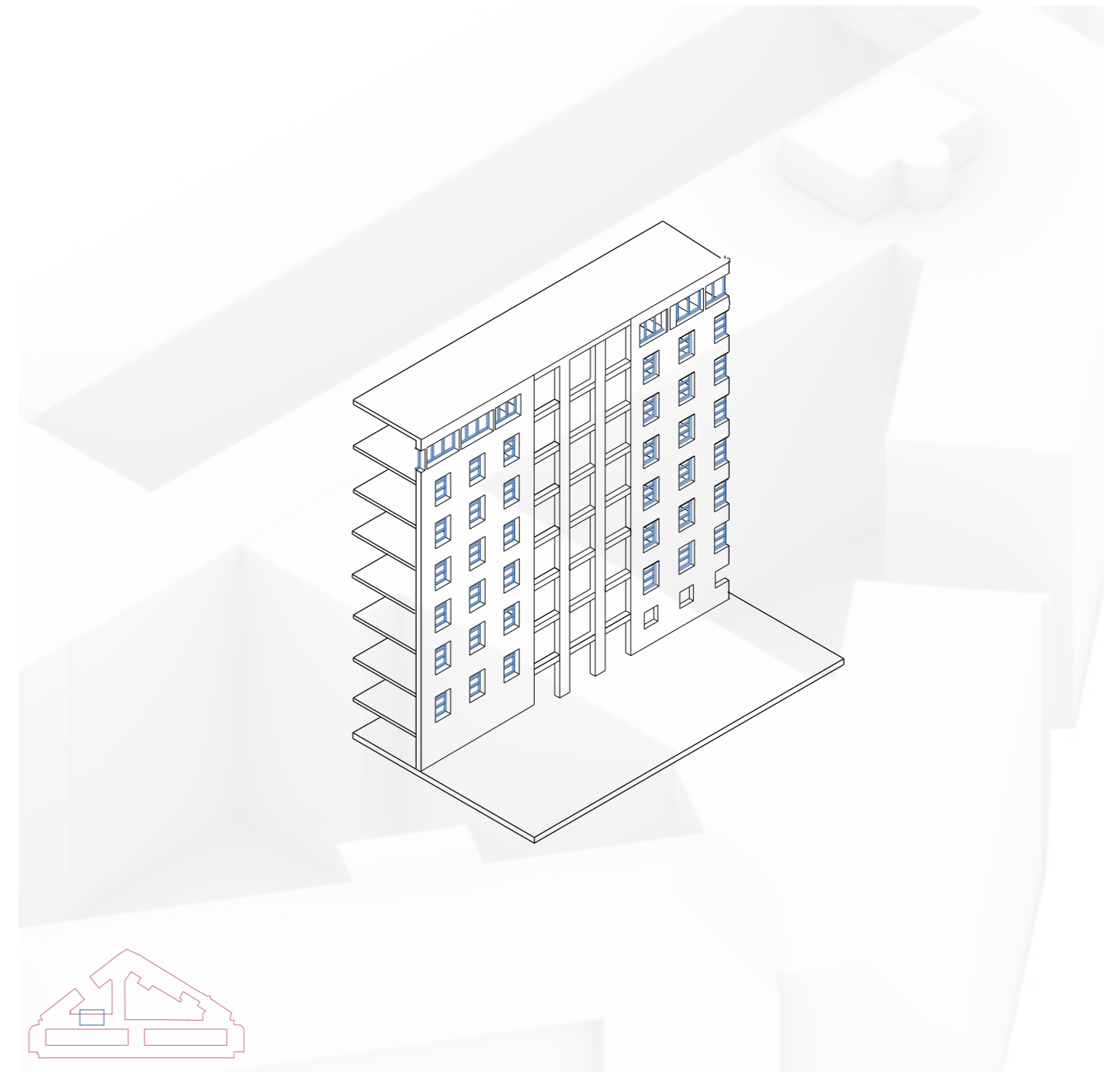
Section - proposal for elevated courtyard

This is the final outcome; I have added a new second facade which becomes the new face of the bank. Under the elevated courtyard which is now the same level as the street - I have positioned an auditorium. There are now galleries on the two sides of the atrium and bridges connecting it.



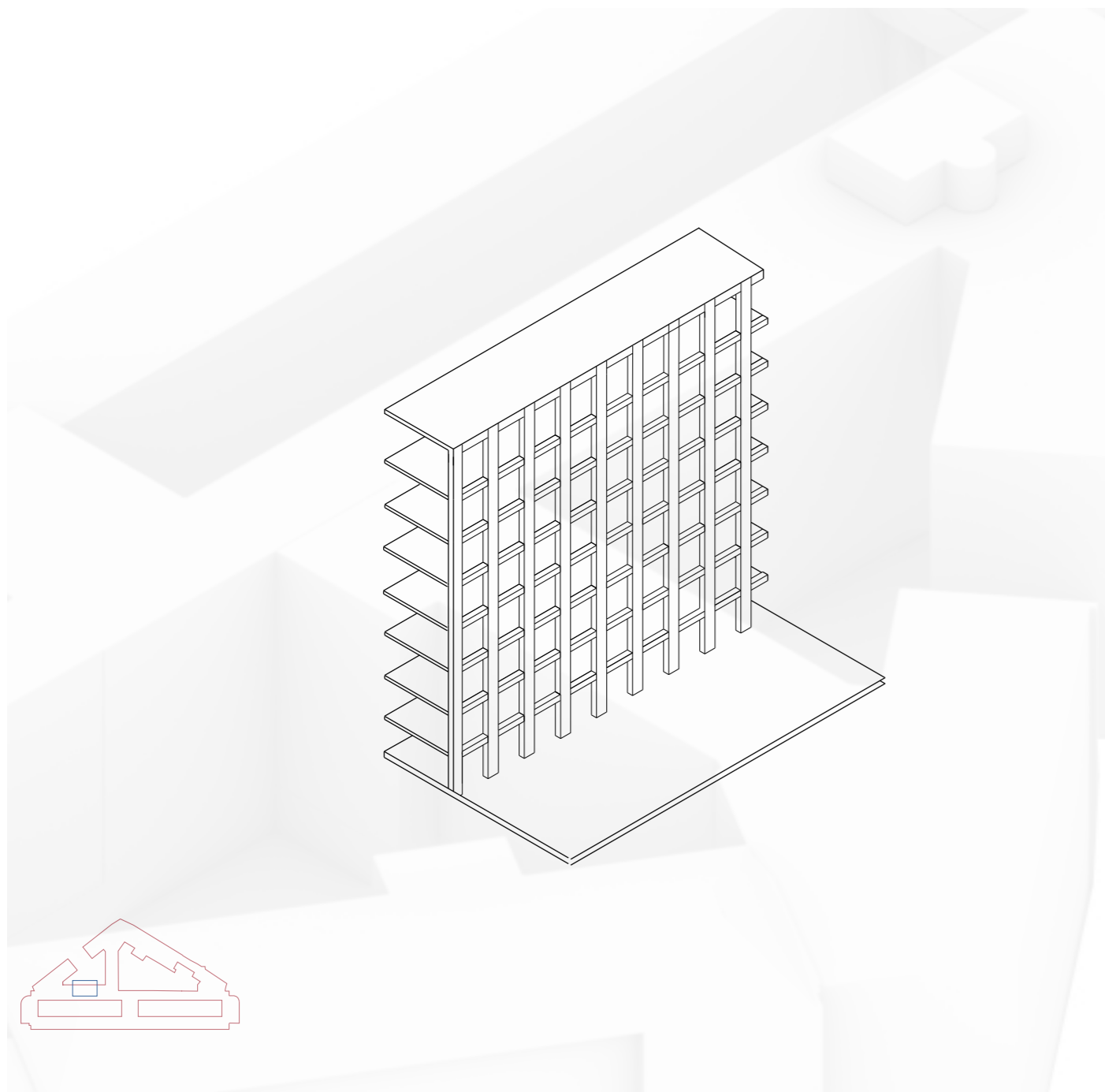
Existing courtyards in the NBB

Currently block 17 is dividing the courtyards and is blocking all the light entering. The courtyards are inefficient and unused.



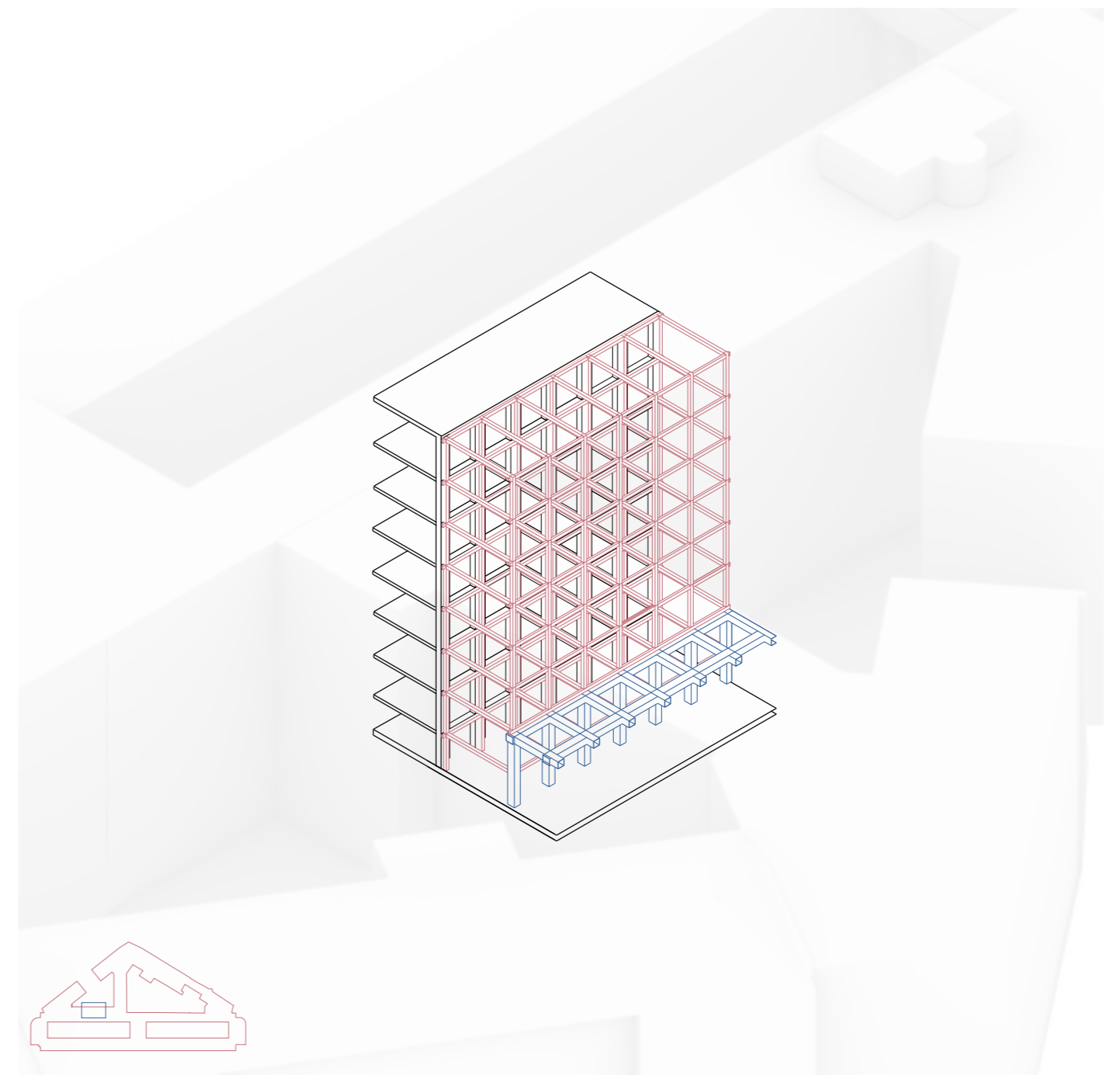
Block 17 demolished

By removing block 17, I provide one bigger courtyard, leaving the exposing structure.



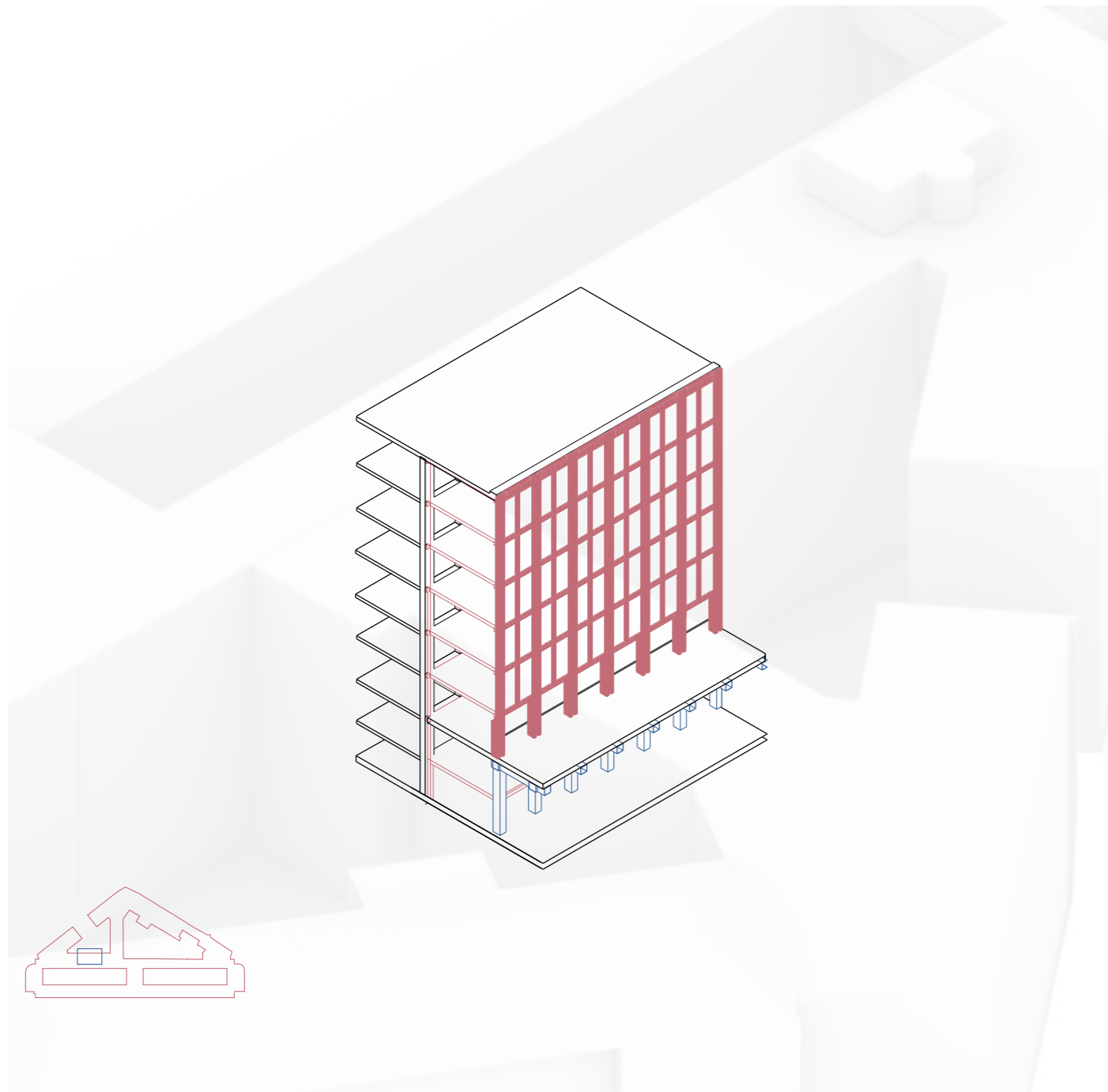
Exposed existing structure

In order to add a new face to the bank, I have stripped the existing facade and left out only the structure of the main volume.



Secondary structure added

In order to elevate the new courtyard and position an auditorium underneath, a secondary structure is added.

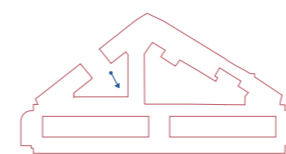


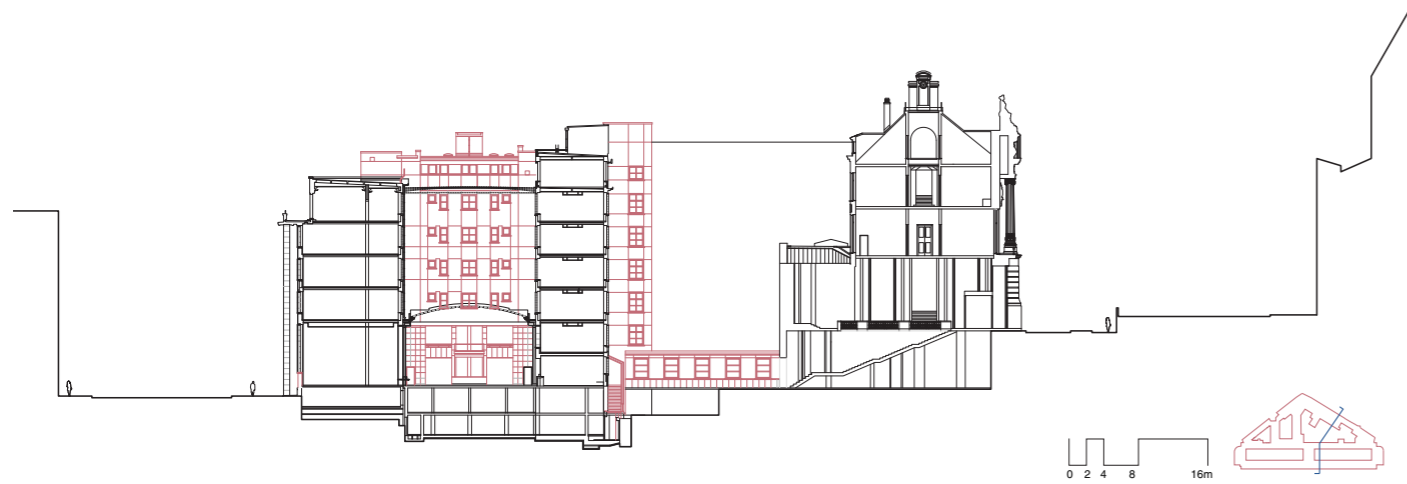
New Face for the NBB

A new facade is added to the elevated courtyard which will serve as an entrance for the bank employees.

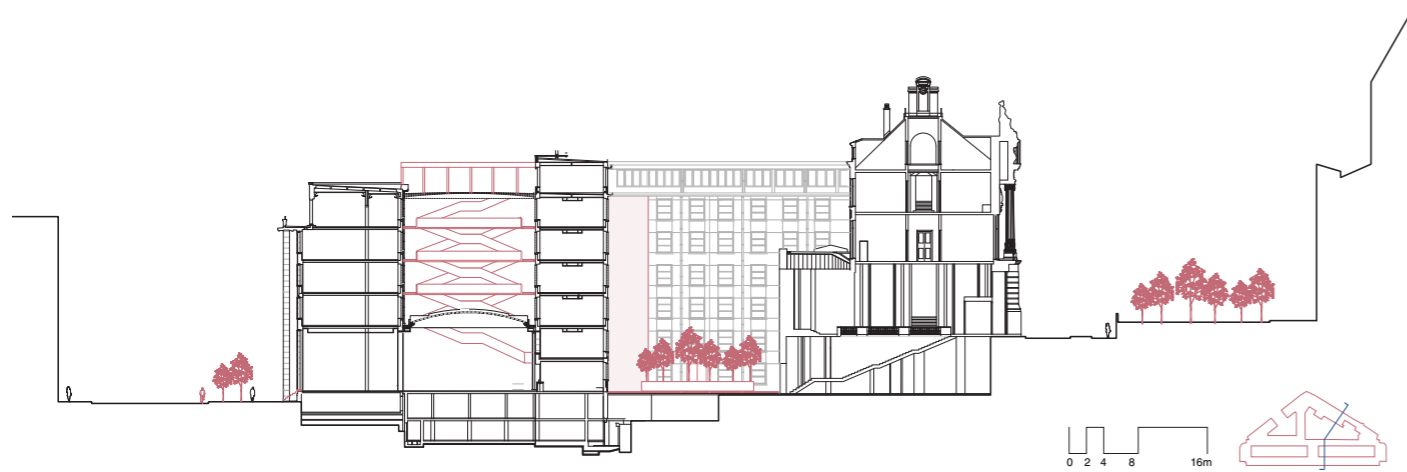


New face and elevated courtyard impression

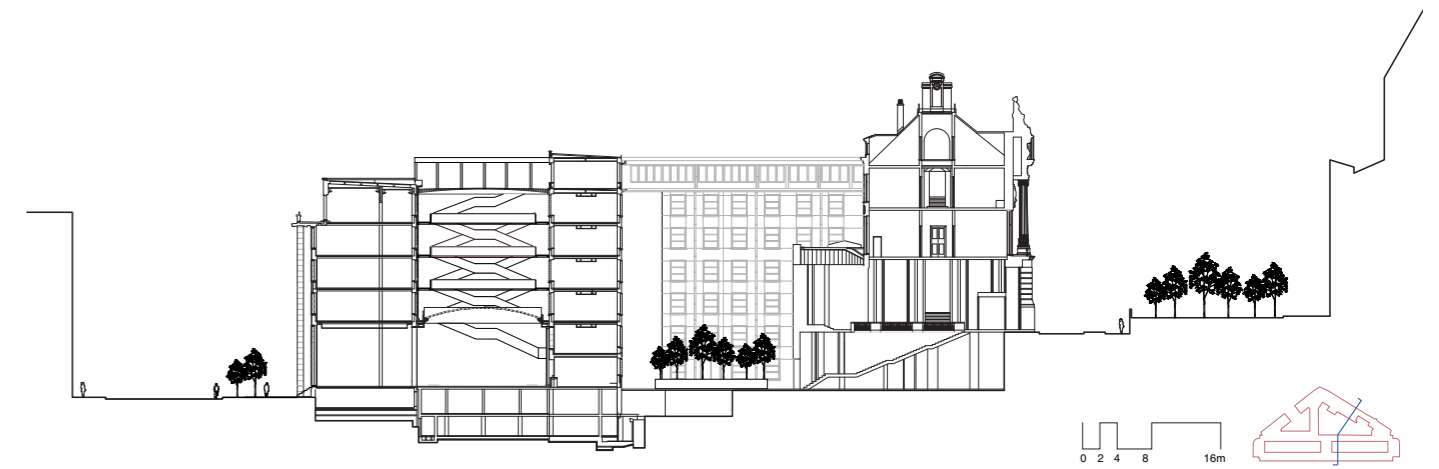




Section with what is removed

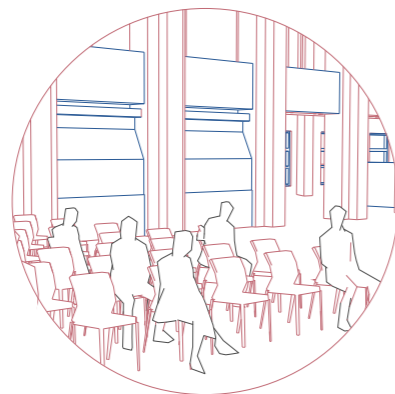
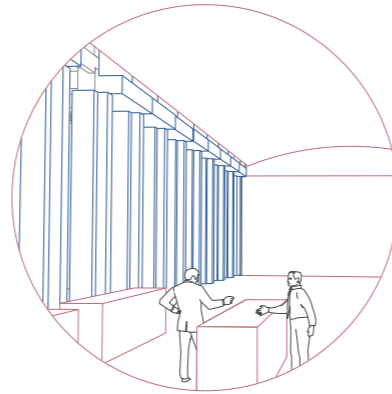
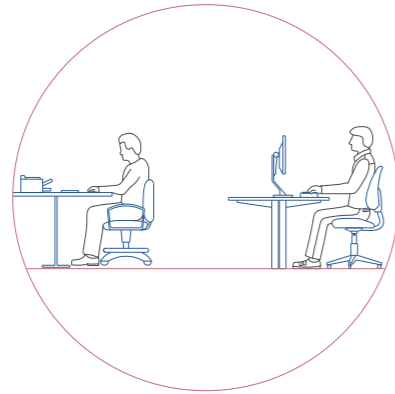
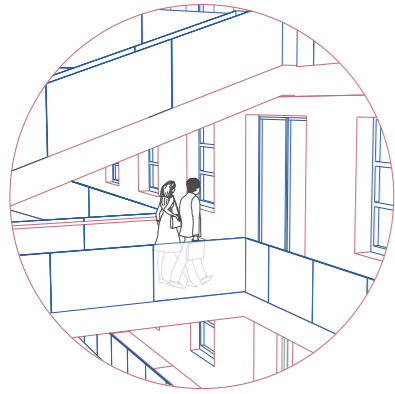
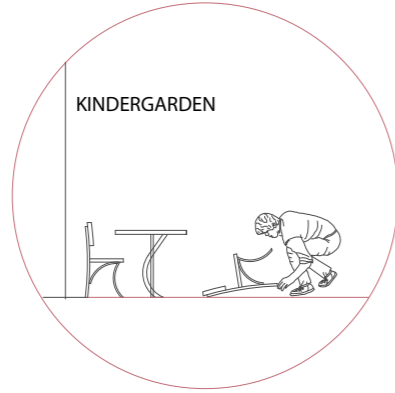


Section with what is added



Section - proposal for elevated courtyard

This section goes through the second entrance of the palace and the banking hall. In order to connect the street and the courtyard there is an additional volume added where the auditorium will be positioned. The central core of the bank continues to function as until now with the exception of the ground floor where the stairs are repositioned and the interior street axis remains open.



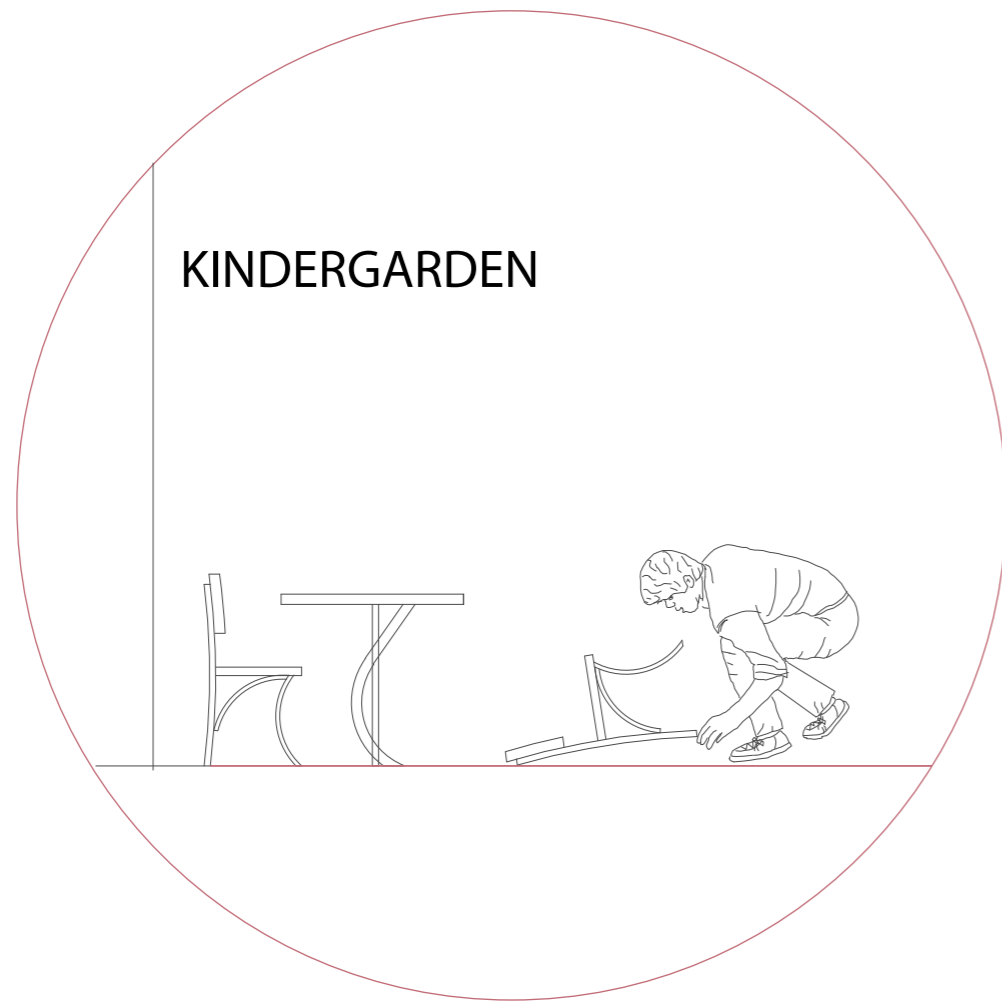
One Day for a Bank Employee

In these line drawings I have illustrated what a day for a bank employee would look like in the National Bank of Belgium after my design proposal.



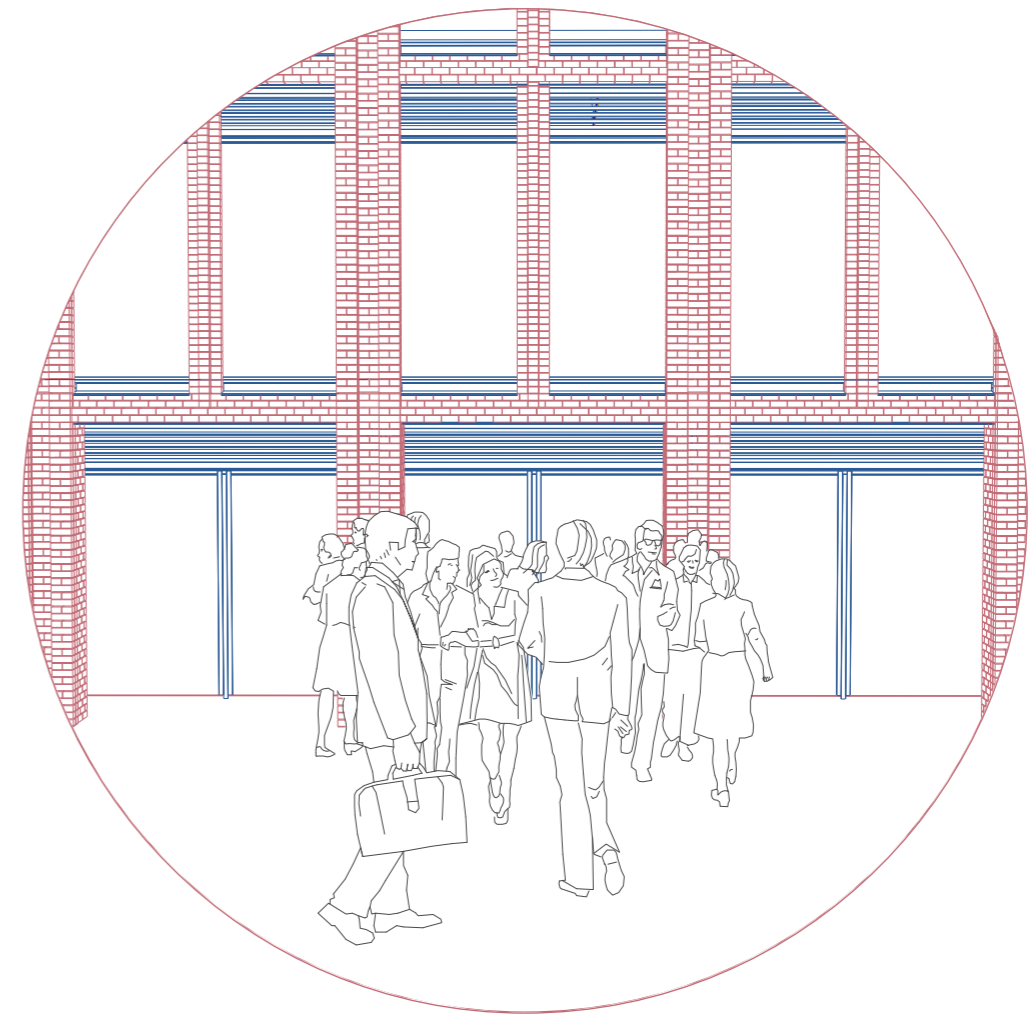
Nursery at The Bank

There is a nursery in the new proposal for the National Bank and all parents could leave their kids to day care while they are at work.



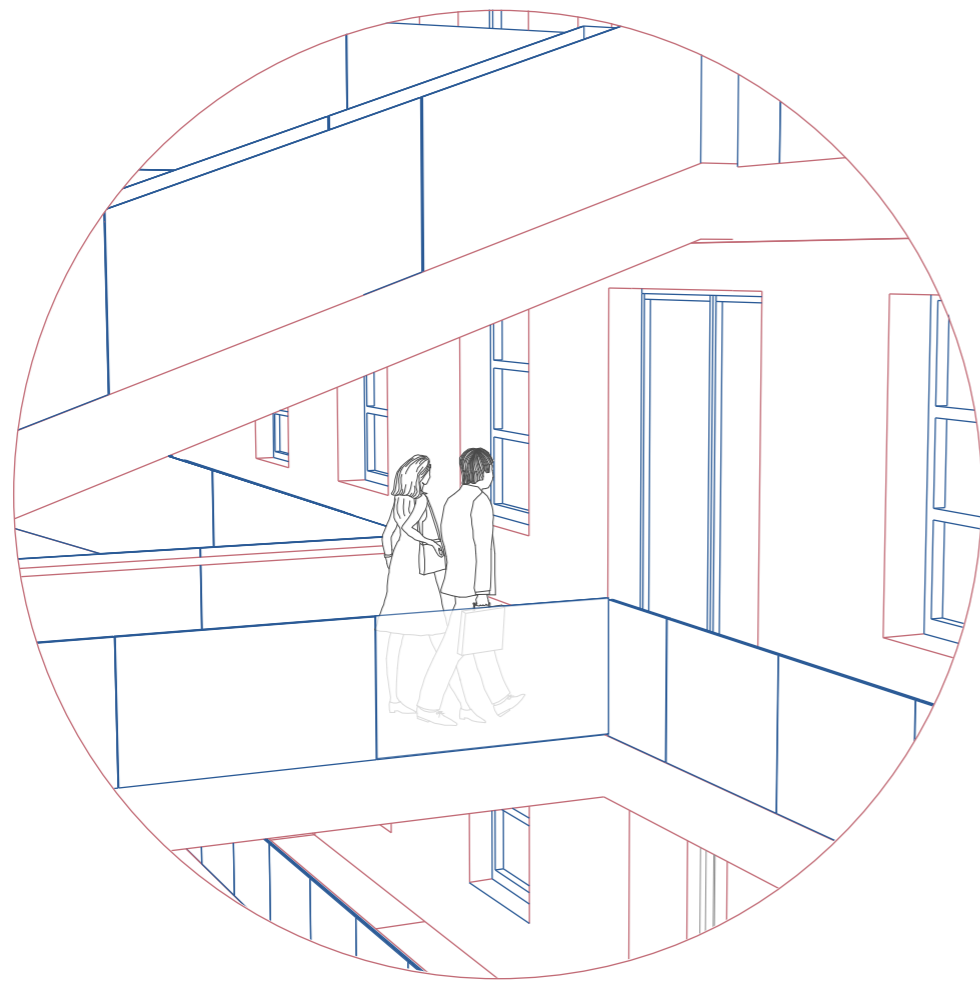
Time Bank Service

Most of the program in the National Bank take advantage of the time banking service. If there is a need of help in the nursery, something might me broken a parent could devote some time to help and receive a time credit.



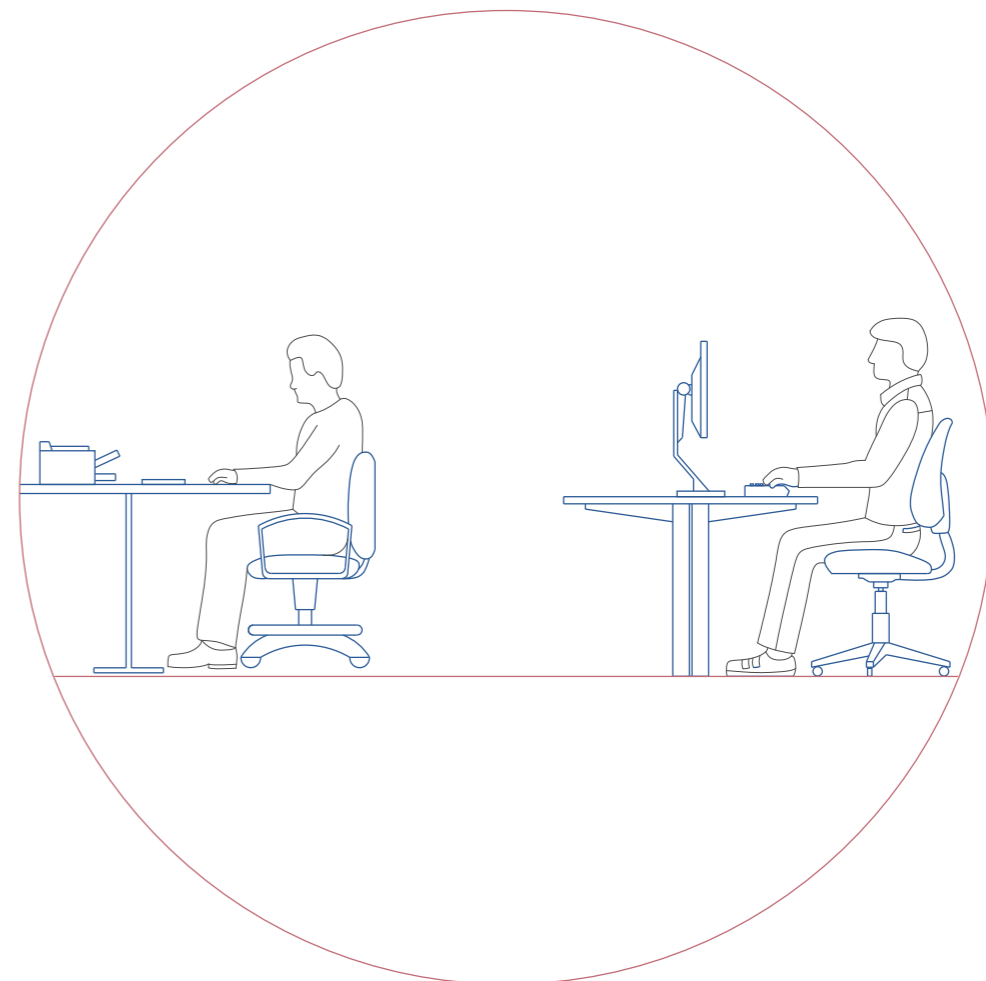
New Employee Entrance

There is a new entrance for the employees which is located on the side of the police station on an elevated courtyard. It is a new face for the bank.



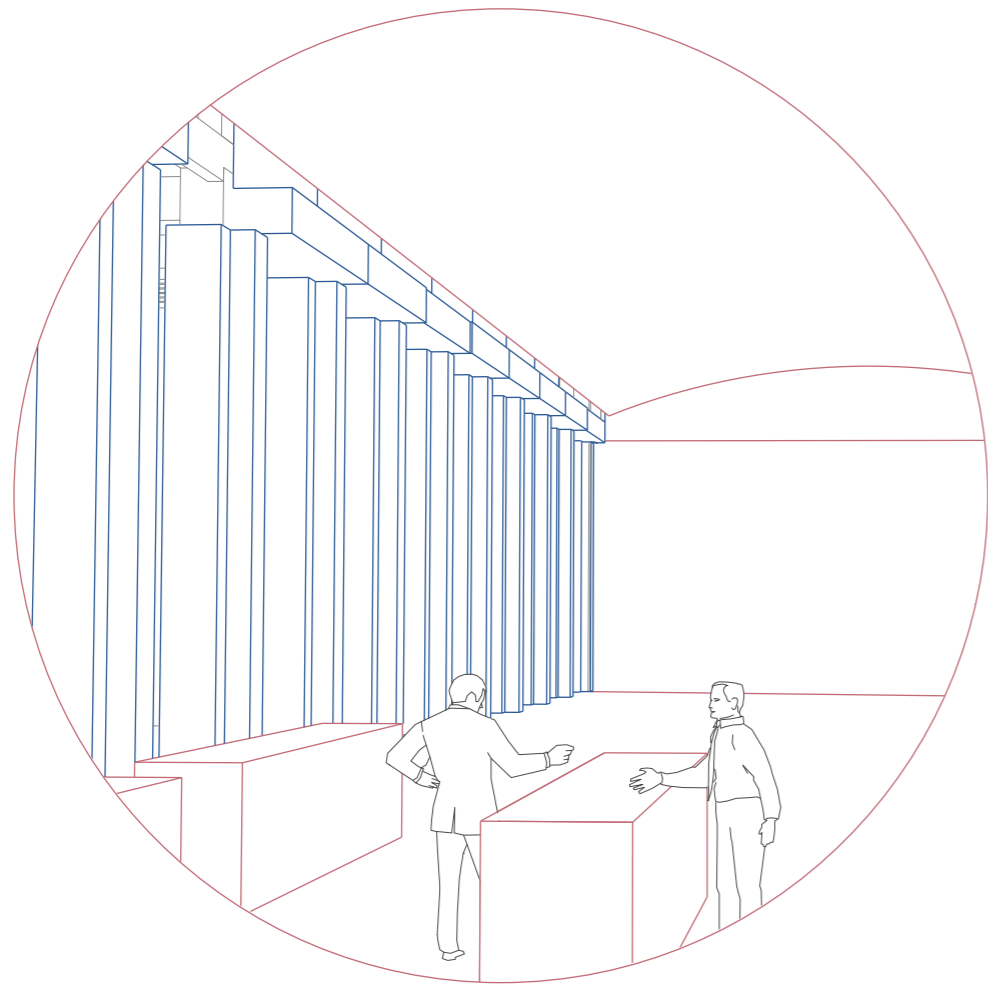
New Circulation in Atrium

There is a new circulation route for the employees in order to reach their office faster. It is located in the existing atrium which were inefficiently used until now.



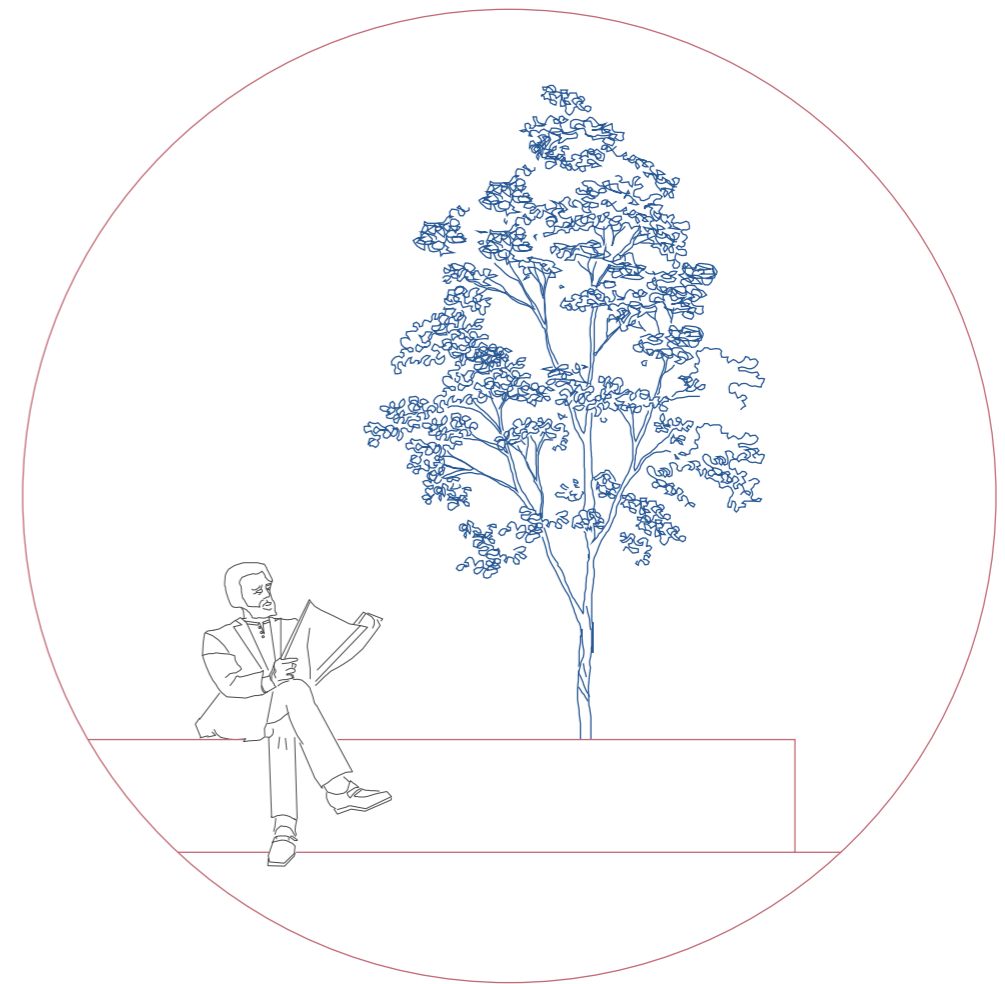
Open Office Floor Plan

With removal of the division boundaries in the office layout, employees are able to observe each other and exchange with each other services and knowledge.



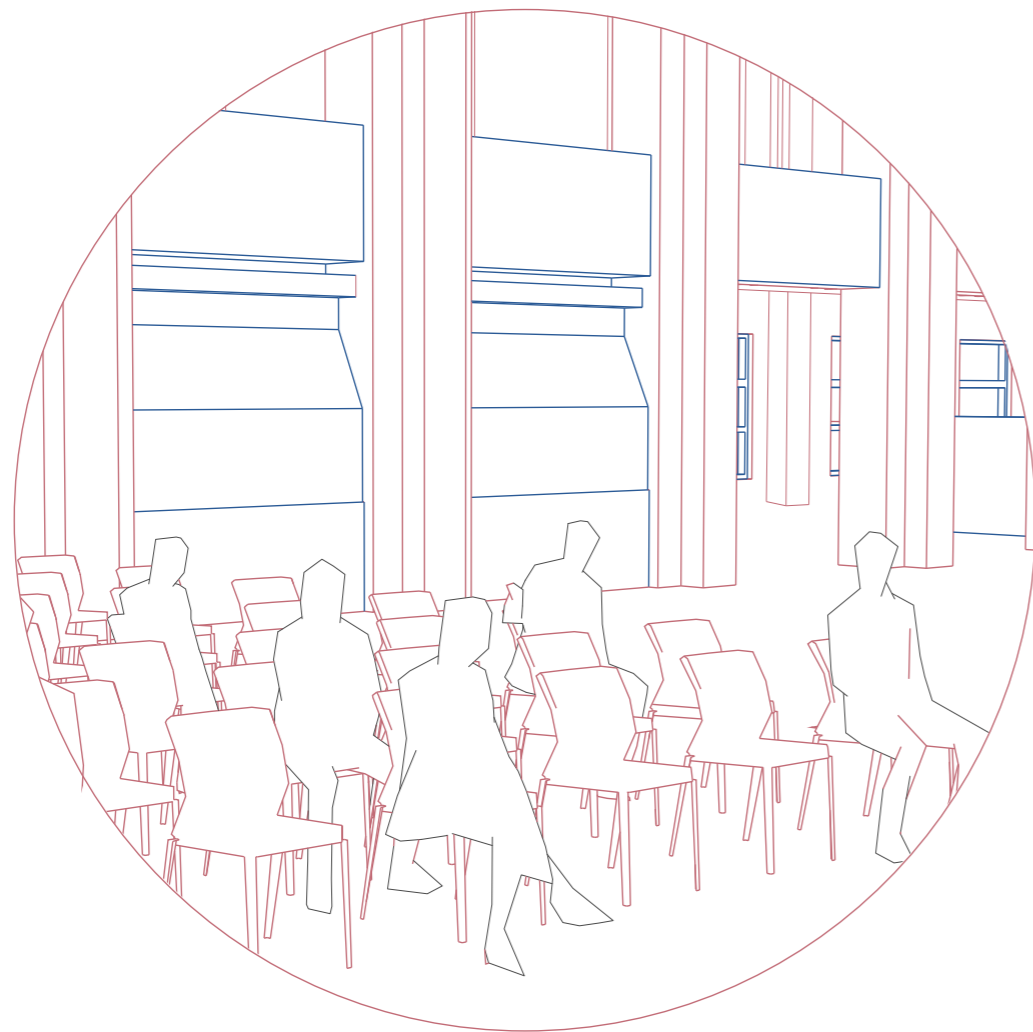
Using Local Currency

Both visitors and office employees could take advantage of the local currency established and buy food and local products from the designated areas in the banking hall.



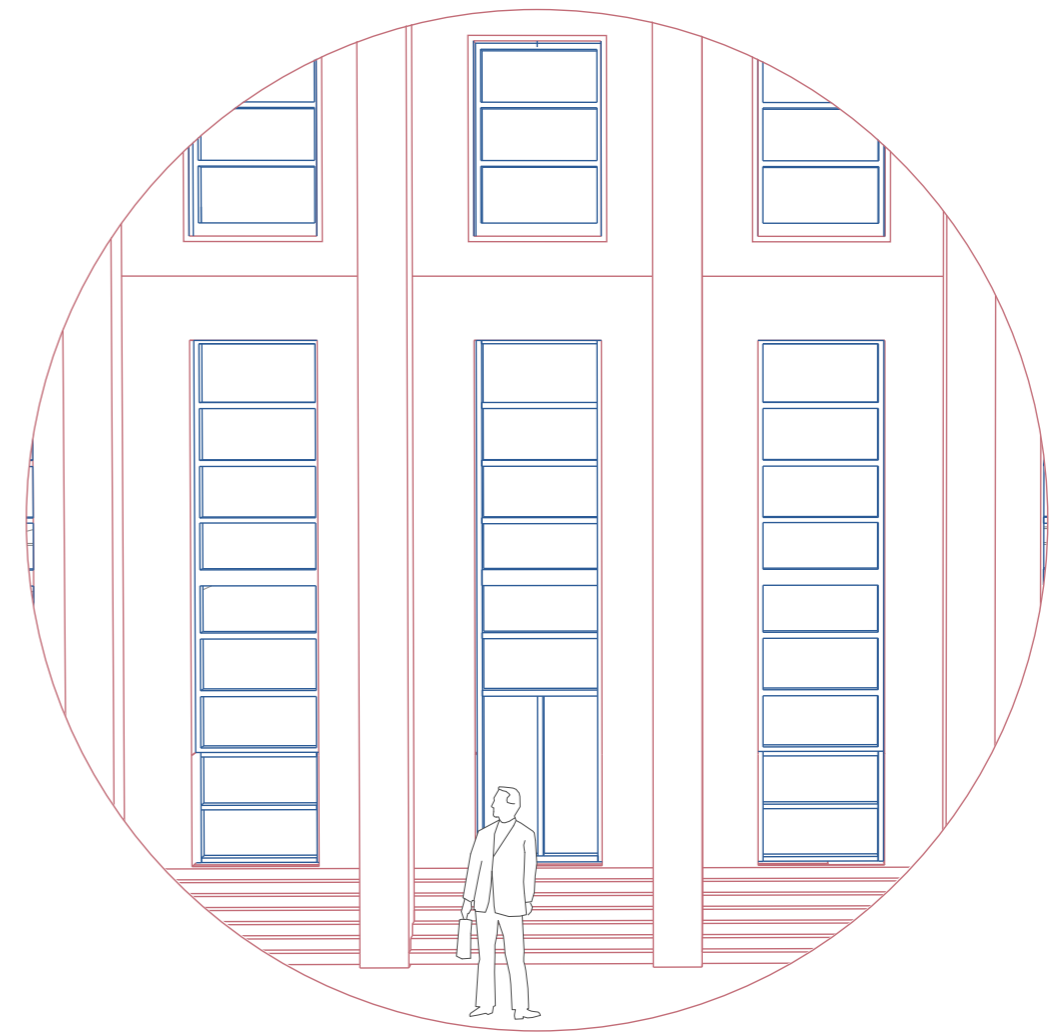
Break in the Garden

While the courtyards were previously used solely for bank services, now they are open to the public and are well programmed. There is a beautiful garden on an elevated courtyard just next to the banking hall.



Micro Banking Lectures

Bank employees could give lectures about alternative monetary systems, or various economic topics in return of time credits.



New Active Edge

Once a 200m facade all fences and restricting the public, now I have activated this facade by removing the fences and designing stairs and sitting spaces which connect the banking hall level with the street level.



PHYSICAL BARRIER ■

ENTRANCE ■

Active Edge

I have analyzed the bank facades in detail. They were previously all blocking out the public. Now all the existing entrances have been reopened, the main 200m long facade is activated by new doors, windows and stairs. There is a break in the mega structure to provide a new face and entrance to the bank.

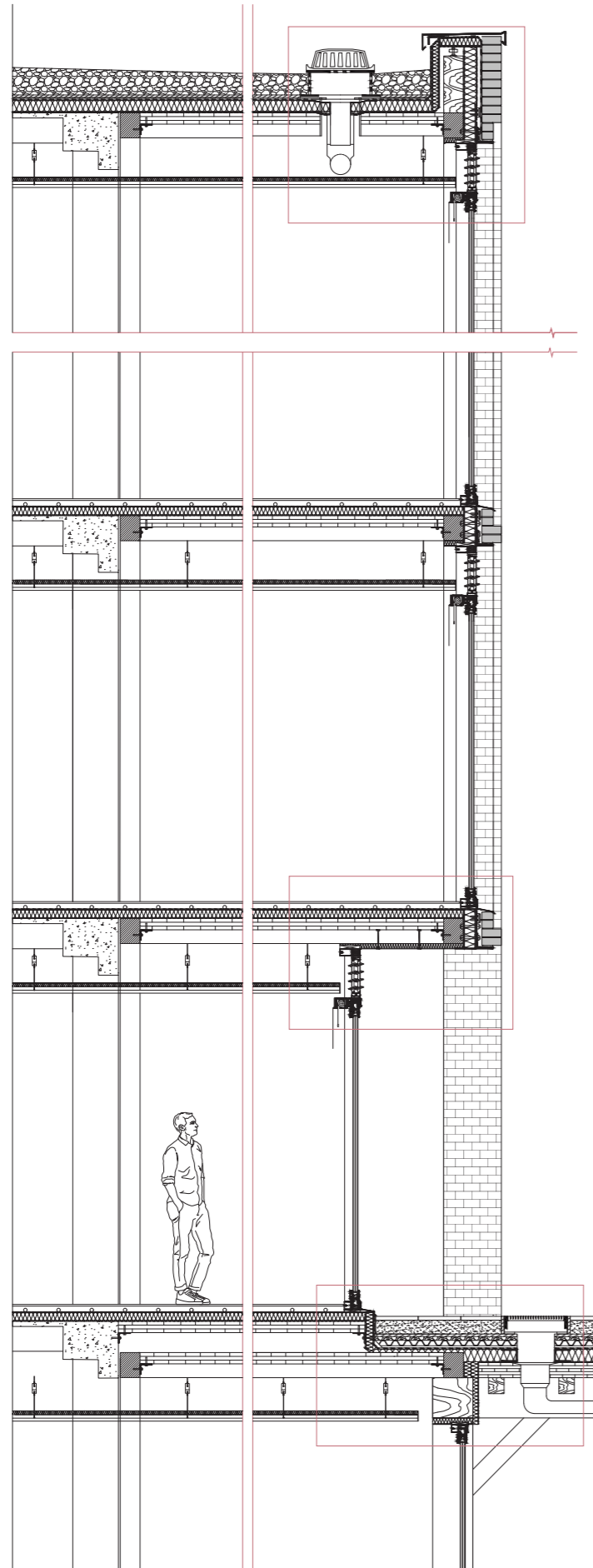


Photograph fragment of main facade

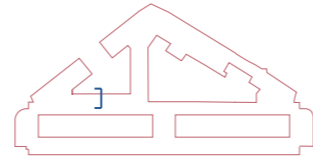


Proposed change for main facade - P4

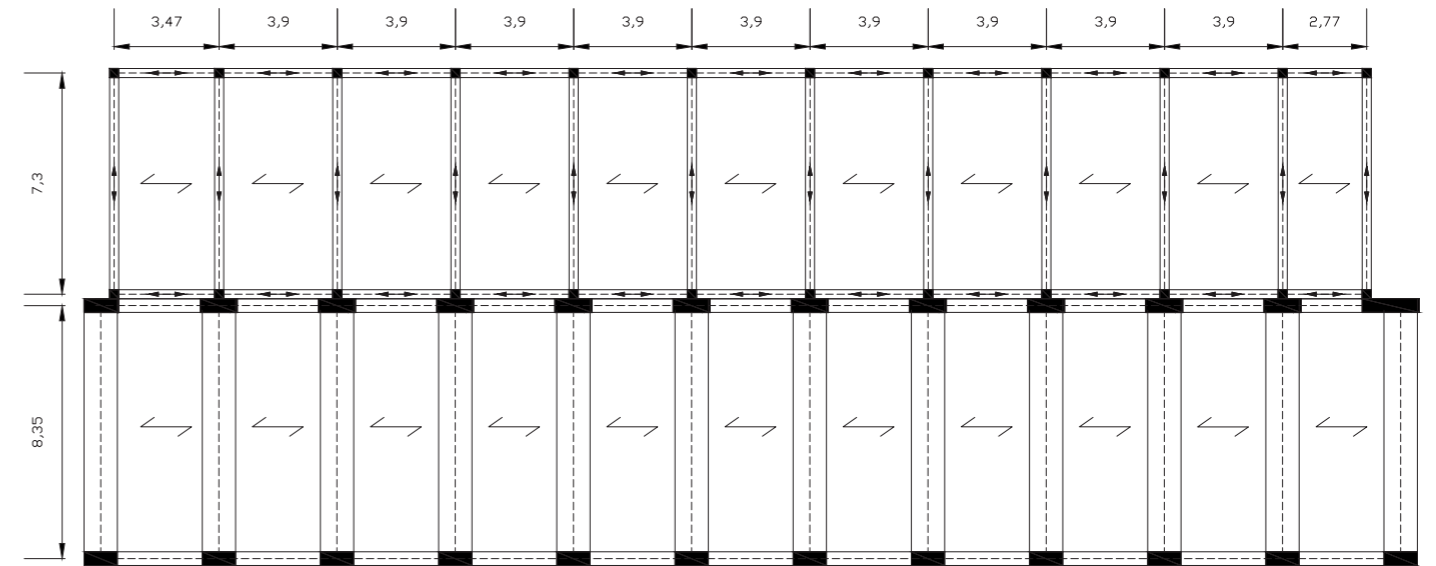
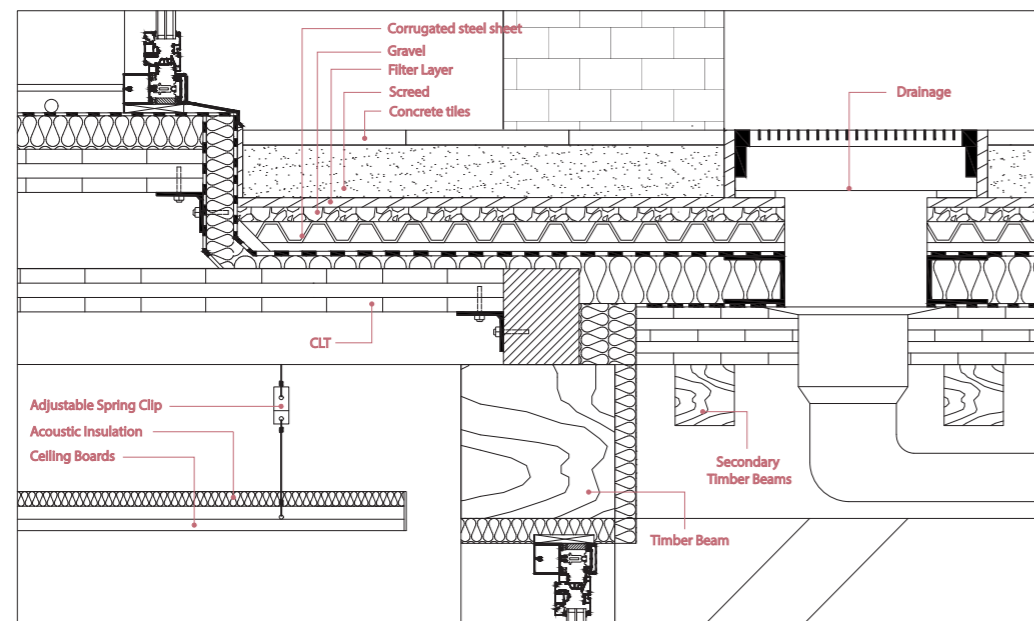
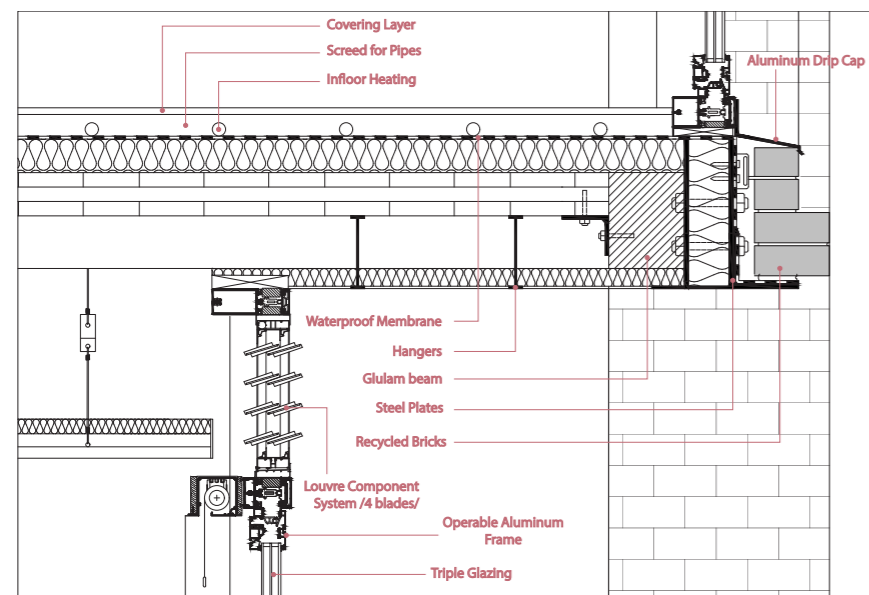
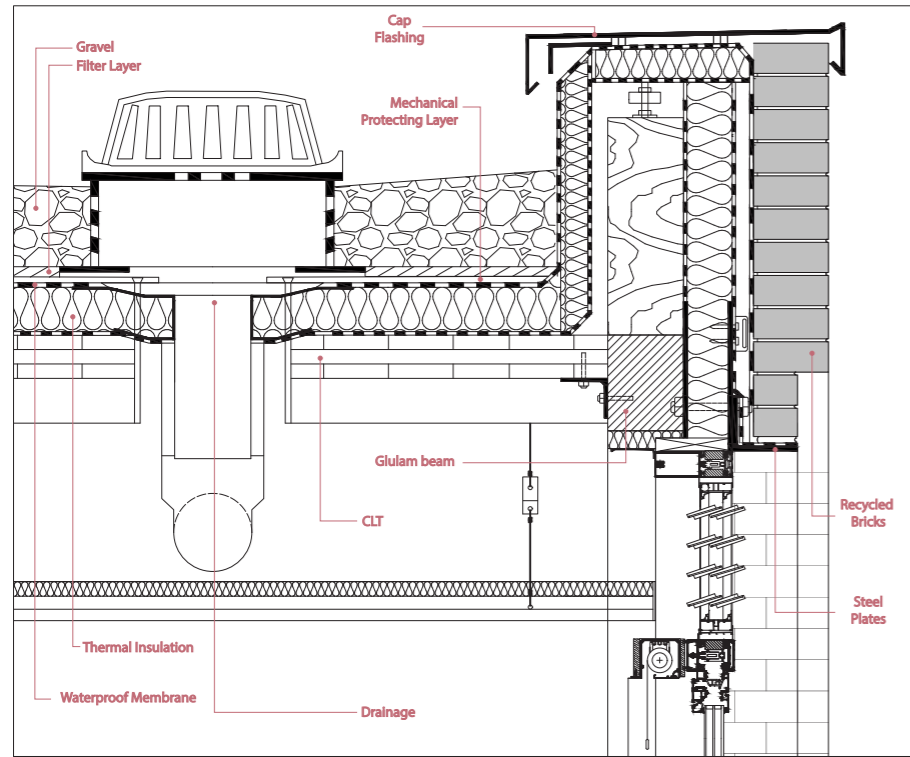
As my goal was to create an active edge which will invite people to get inside the banking hall I have decided to add new staircases which will connect the banking hall level to the street. Moreover, new doors and windows have been inserted to reach the new level.



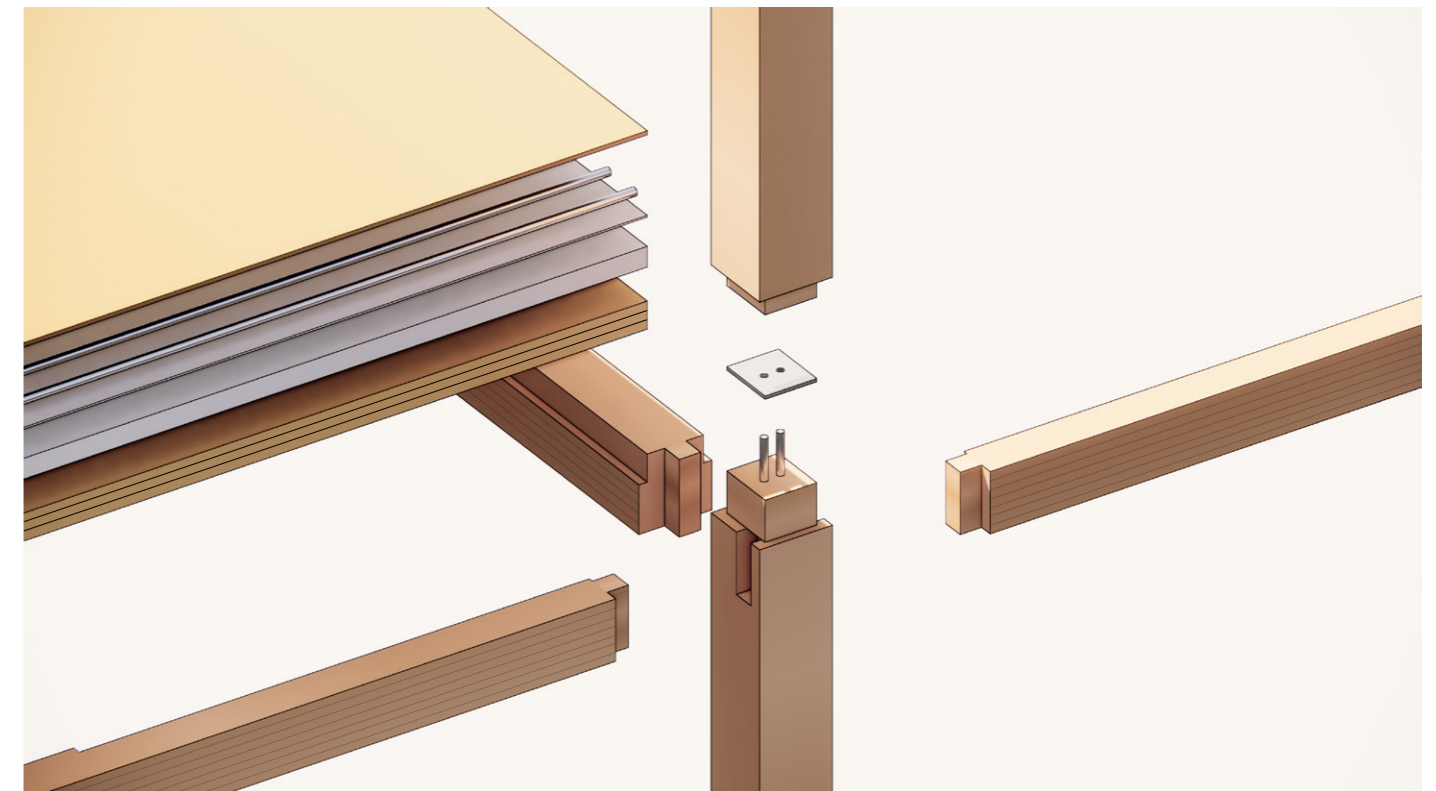
*Detailed section of new facade
/elevated courtyard/*



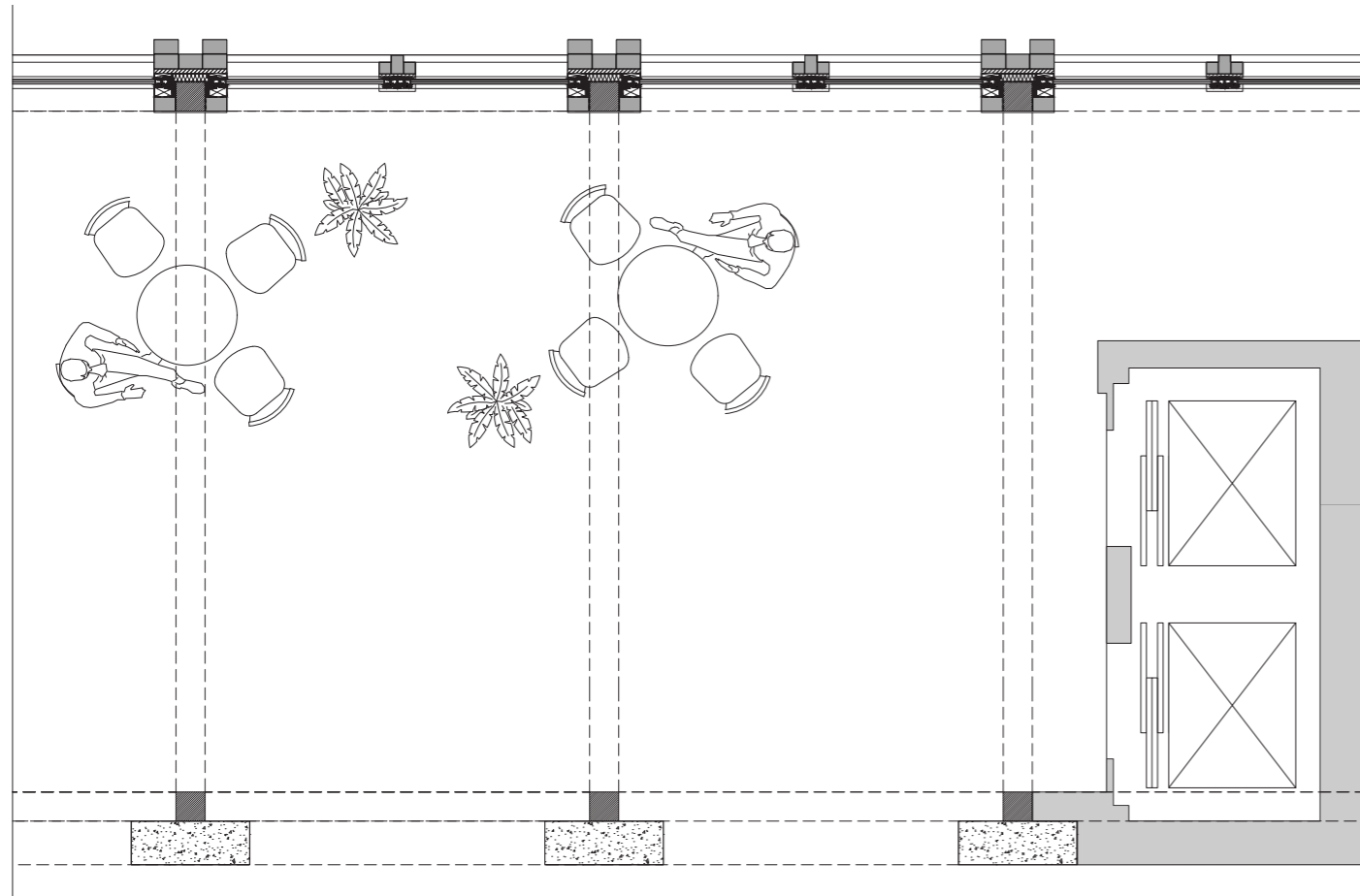
*Detailed elevation of new facade
/elevated courtyard/*



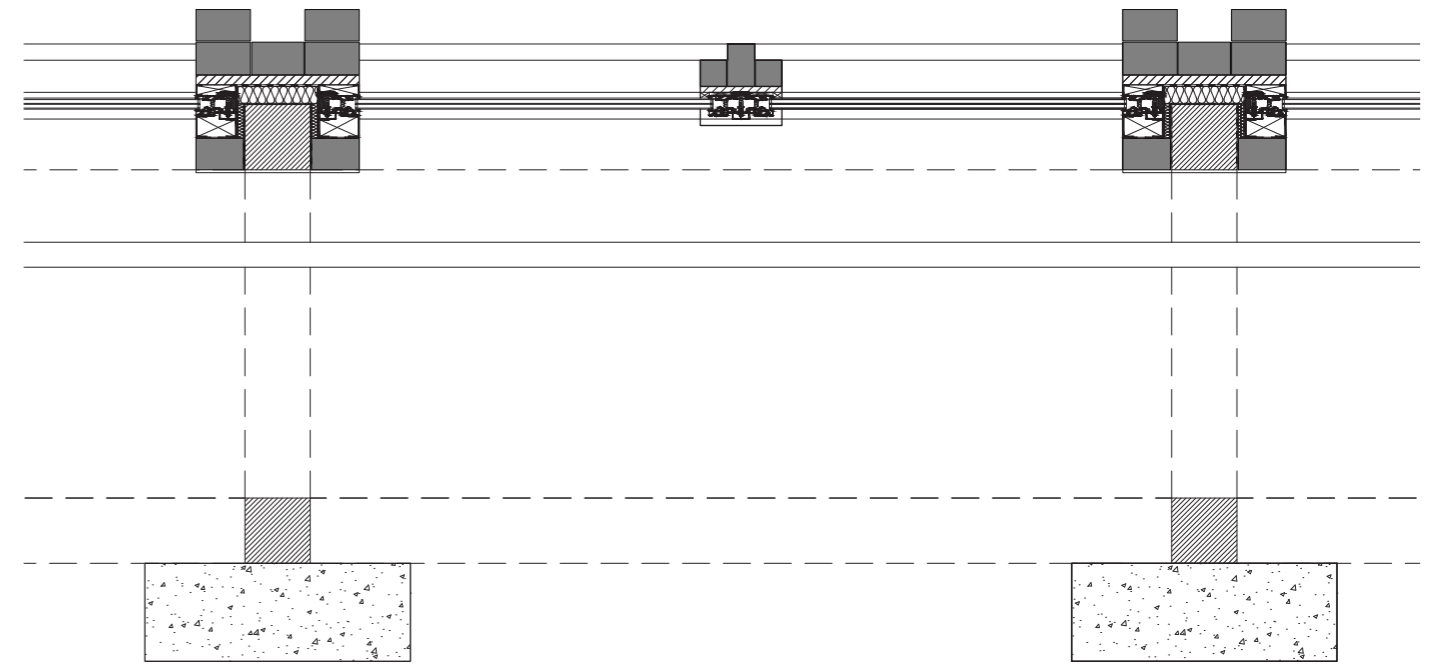
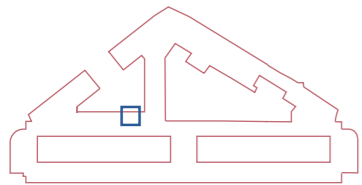
Load distribution diagram



Glulam beams & columns construction



Close up of new facade for employees



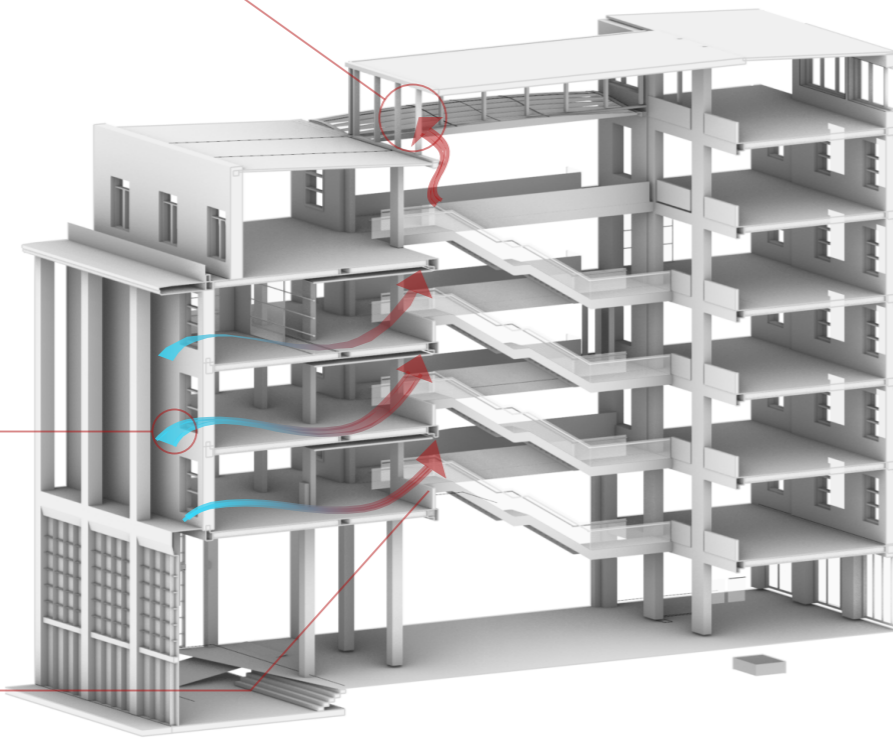
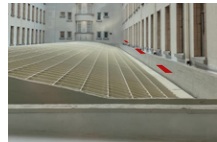
Horizontal detail of new facade for employees

Elevated roof in the middle core
Ventilators and operable windows

Window grill for ventilation with closed window

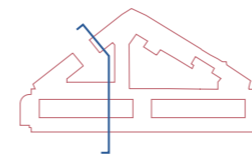
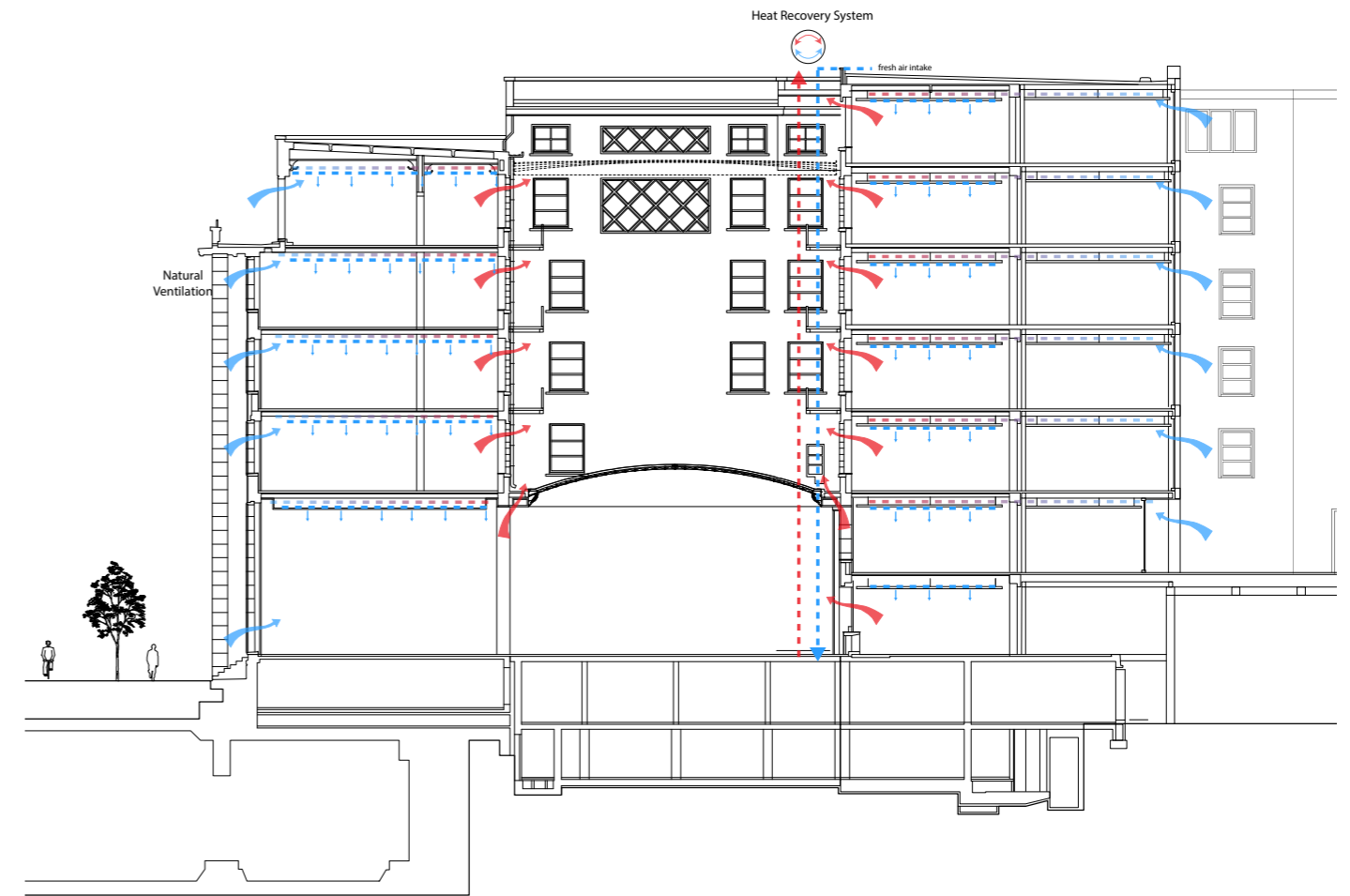


Perforation of existing structure of glass roof



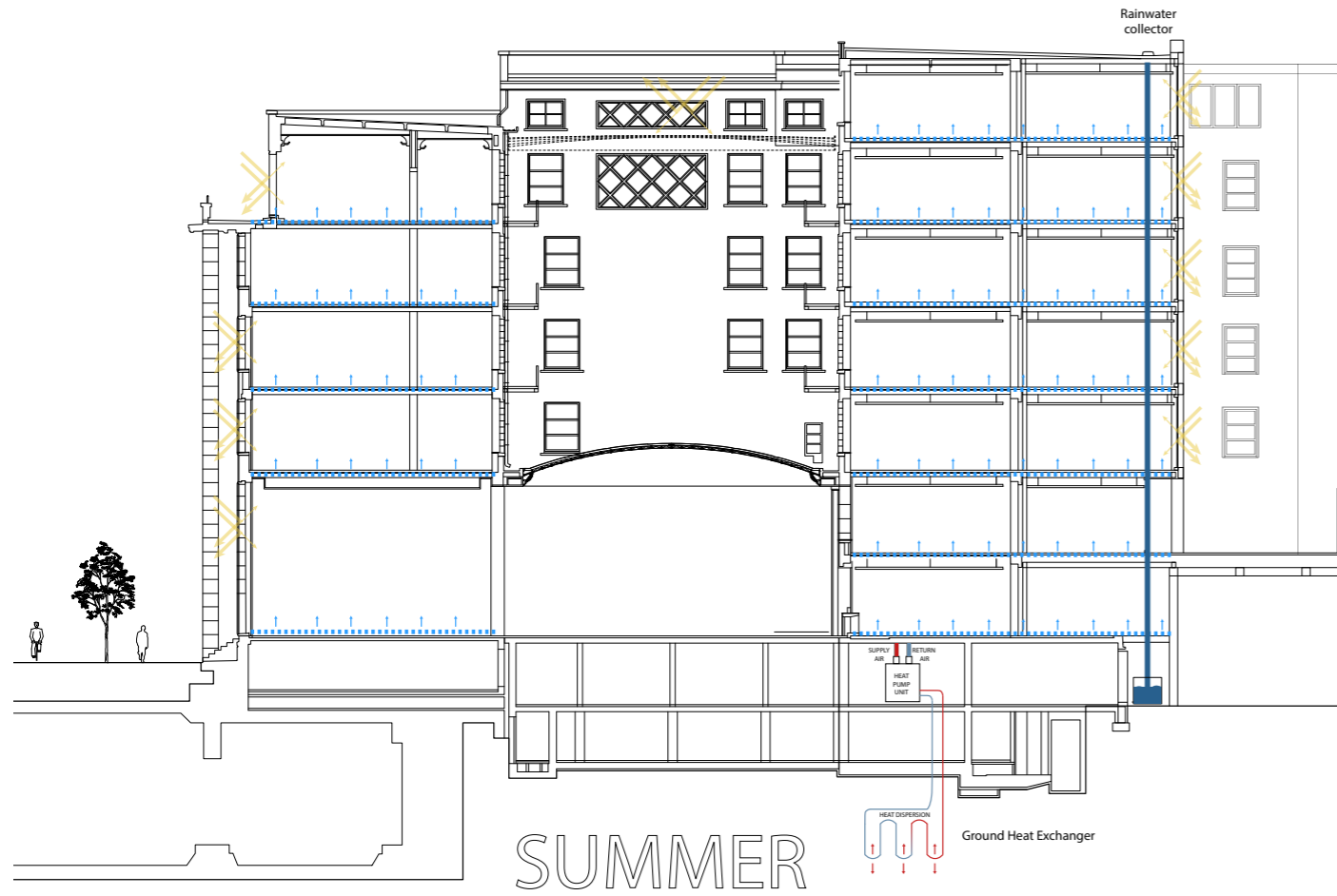
New functional atrium in the NBB

With the removal of the middle core that interrupts the banking hall, I have designed new atrium which is one level higher than the existing glass ceiling. It is covered with operable windows which server for taking out the still air out of the atrium through the use of fans.



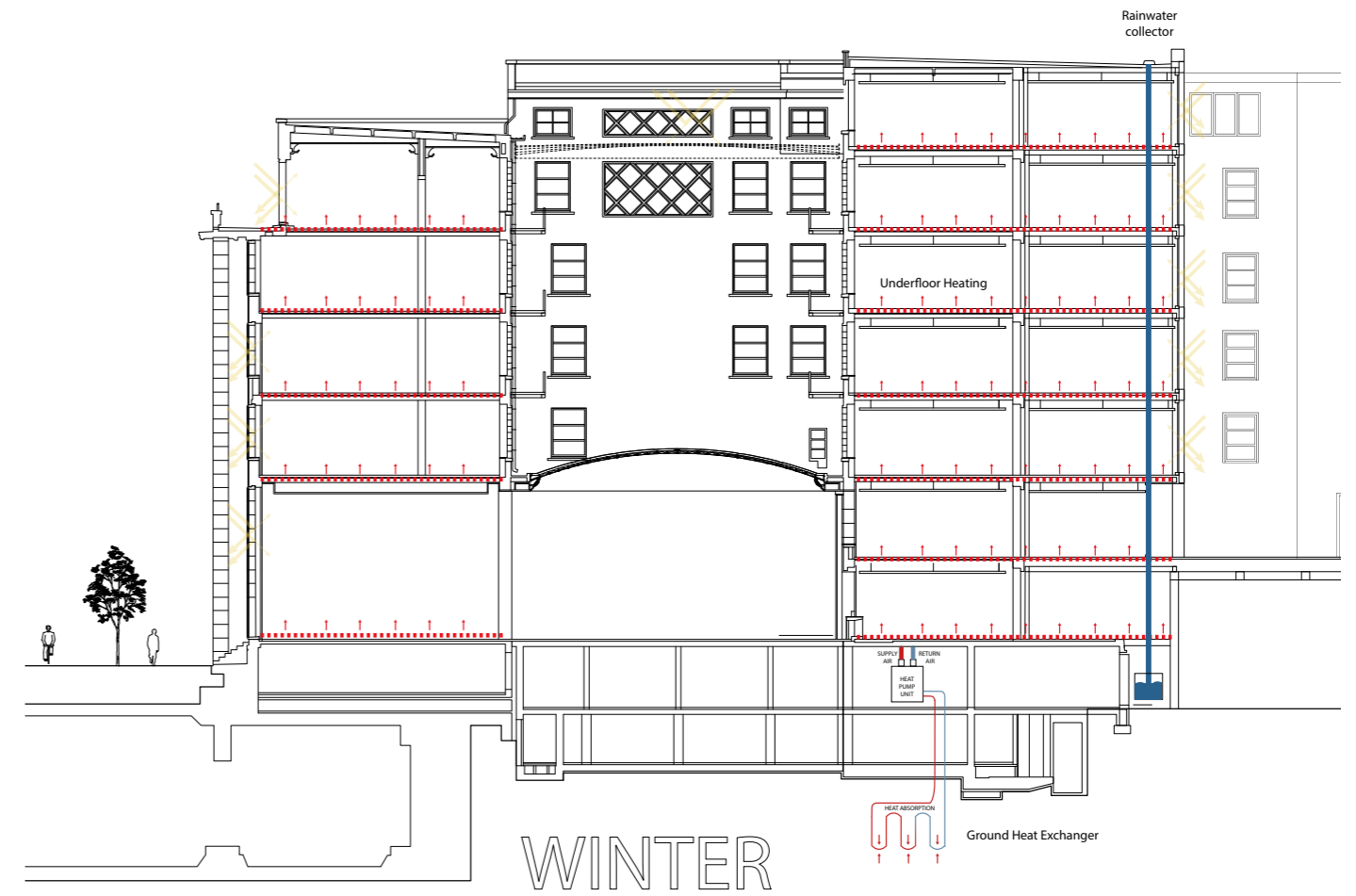
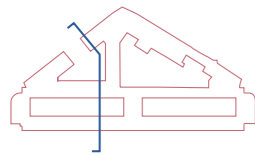
Natural and Mechanical Ventilation

By adding a new second facade, I have provided an opportunity for natural ventilation in the building. Due to the stack effect, the atrium will be used for taking out the warm air. Using heat recovery system the exhausted air will be cooled and used for mechanical ventilation within the building.



Climate Diagram - Cooling Season

In order to propose more sustainable climate system which will provide comfort both to the workers and visitors, I have decided to use geothermal system, which will be taking advantage of the earth temperature during summer to cool the building through underfloor cooling.



Climate Diagram - Heating Season

In order to propose more sustainable climate system which will provide comfort both to the workers and visitors, I have decided to use geothermal system, which will be taking advantage of the earth temperature during summer to cool the building through underfloor heating.

